

REVISION OF THE GENUS *HABUTARUS* BALL & HILCHIE FROM THE
AUSTRALIAN REGION
(INSECTA, COLEOPTERA, CARABIDAE, LEBIINAE)

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As a third part of a general revision of the Oriental-Australian species formerly assigned to the genus *Anomotarus* Chaudoir (s.l.), the genus *Habutarus* Ball & Hilchie is revised. *Nototarus crassiceps* (Macleay) and *N. morosus* Sloane from Australia, and *N. pilosus* Baehr from New Guinea are herein transferred from the genus *Nototarus* Chaudoir of the subtribe Calleidina to the genus *Habutarus* Ball & Hilchie of the subtribe Apenina. A new subgenus, *Setitarus* subgen. nov. is erected for *N. pilosus* Baehr. For nomenclatural stability, a lectotype is designated for *Nototarus crassiceps* (Macleay). The following new species of *Habutarus* are described: *H. abboti*, *H. calderi*, *H. canaliculatus*, *H. chillagoensis*, *H. convexpennis*, *H. demarzi*, *H. eungellae*, *H. iridipennis*, *H. kirramaie*, *H. laticeps*, *H. monteithi*, *H. nitidicollis*, *H. opacipennis*, *H. parviceps*, *H. punctatipennis*, *H. rugosipennis* and *H. weiri* from Australia, and *H. madang* and *H. wau* from New Guinea. Due to its close relationships to the African-Oriental genus *Cymindoidea* Castelnau, the genus *Habutarus* represents an Oriental faunal element that immigrated into the Australian Region only after the Australian plate came in contact with the South Asian insular are some 10 mya. The genus subsequently underwent a period of rapid speciation, mainly in the montane rainforests along the east coast of Queensland. Some species, however, also occur in more open forests in northern Queensland and the Top End of the Northern Territory. Most species are very closely related which suggests very recent, probably Pleistocene speciation events. □ *Coleoptera*, *Carabidae*, *Lebiinae*, *Habutarus* sp. nov., *Setitarus* subgen. nov., *Australia*, *New Guinea*.

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The lebiine subgenus *Habutarus* was proposed by Ball & Hilchie (1983) for the unique New Guinean species *Nototarus papua* Darlington. Based on the structure of the male and female genitalia and of the mouthparts, the authors recognised that this species could not remain in the genus *Nototarus* Chaudoir of the lebiine subtribe Calleidina, but belonged to the subtribe Apenina, closely related to the Oriental-African genus *Cymindoidea* Castelnau. They included *Habutarus* as a subgenus within *Cymindoidea* but it was later raised to generic status by Lorenz (1998). Baehr (1996) described the New Guinean species *Nototarus pilosus* Baehr but was doubtful of its generic placement as it significantly deviated in structure from other congeners. This species is herewith transferred to *Habutarus*, but because of its specialised structure, is given its own subgenus *Setitarus*, subgen. nov.

Apart from both New Guinean species mentioned above, *Nototarus* Chaudoir, as presently used, is an exclusively Australian genus that Ball & Hilchie (1983), Moore et al. (1987), and

Lorenz (1998, 2005) included as subgenus of *Anomotarus* Chaudoir. This seems justified in view of the close relationships of both taxa and the fact that some characters formerly used to separate the two genera are variable and hence, it is only the presence or absence of the mental tooth that differentiates the two (see Baehr, 2005b; 2006).

The apenine genus *Cymindoidea* s. str. ranges through large parts of the Ethiopian and Oriental Regions including the Greater Sunda Islands, while *Habutarus* was previously known only to occur in New Guinea (Ball & Hilchie, 1983). During examination of the Australian *Nototarus* it became evident that two species, *N. crassiceps* (Macleay) and *N. morosus* Sloane belonged to *Habitarus*, to which they are transferred in the present paper. In addition many undescribed Australian species were discovered and they are described below. *Habutarus* is certainly closely related to *Cymindoidea*, but for biogeographical reasons I prefer to give *Habutarus* the status of a separate genus, consistent with the arrangement of Lorenz (1998, 2005).

The present paper is the third part of a general revision of the anomotarine complex in the Oriental and Australian regions that began with revisions of the subgenus *Anomotarus* s. str. (Baehr, 2004; 2005b; 2006) and will be finished by the revision of the subgenus *Nototarus* (in preparation).

MATERIAL AND METHODS

A total of 81 specimens were examined, mainly from collections by G. B. Monteith and his co-workers (Queensland Museum, Brisbane), from eastern Queensland. Additional material and types were borrowed from the following institutions and collectors: Australian Museum, Sydney (AMS), Australian National Insect Collection, Canberra (ANIC), Hungarian National Museum of Natural History, Budapest (HNMB), Institut Royal des Sciences naturelles, Brussels (IRSNB), Museum of Comparative Zoology, Cambridge/Mass. (MCZ), Museum d'histoire naturelle, Geneva (MHNG), Museo regionale di Storia naturale, Turin (MSNT), Queensland Museum, Brisbane (QM), South Australian Museum, Adelaide (SAMA), Western Australian Museum, Perth (WAM), Luca Toledano, Verona (CBM), and from the collections made by the author and preserved in the working collection of M. Baehr, Munich (CBM).

Types of all described species were examined. For nomenclatural stability lectotypes were designated when necessary.

Standard taxonomic methods were used. Male and female genitalia were removed from specimens soaked for a night in a jar under moist atmosphere, then cleaned for a short while in hot KOH. Habitus photographs were taken with a digital camera using ProgRes Capture Basic and AutoMontage and enhanced with Corel Photo Paint 11.

Data of all examined specimens are given in full and taken verbatim from the labels, including all ciphers, notes of determiners and curators, and printed labels. The original notation for the date of collection, especially of the month (arabic, roman, abbreviations), has also been used. A '/' with a space before and after, denotes a new label, and two spaces mark a new line on the same label. Earlier determinations are recorded with quotation of the determiner. The following abbreviations have been used: NP, National Park; NT, Northern Territory; PNG, Papua New Guinea; QLD, Queensland.

Distribution maps are based only on label data of examined specimens. In view of the limited material available for several species, the maps may not show the complete species distribution.

Measurements were taken using a stereo microscope with an ocular micrometer. Body length was measured from the apex of labrum to the apex of the elytra and therefore measurements may differ from those recorded by other authors. Length of the orbit was taken from the posterior margin of the eye to the position where the orbital curvature meets the neck. The length of the pronotum was measured along the midline, and the width of its base at the position of the posterior lateral setae. At least 6 specimens of each taxon were measured when available, otherwise all specimens were measured. Specimens of both sexes and of different size and shape were chosen. In obviously variable species or in species with a wide distribution, more specimens were measured to encompass the complete range of size and shape.

For examination of the taxonomically important surface punctation and microreticulation a stereo microscope with at least 40× magnification, and a good lamp of high intensity that could be focussed was used. To study the exact definition of the microsculpture a full spectrum light is preferable. Use of uncorrected fibre-optic lights can substantially change the impression of surface structures.

BIOLOGY

Little is recorded about the habits and way of life of *Habutarus* species. This is not surprising in view of the small number of specimens available for many species. Even for the more recently sampled Australian species, which may be locally common, records are very poor, because most specimens were collected by pitfall trapping or sifting.

Species of *Habutarus* are probably ground-living and are not capable of flight. They seem to prefer rainforest or at least closed forests, although certain northern species have also been sampled in more open forest and wet tropical savannah woodland. Nevertheless, they apparently prefer a rather wet climate and more or less dense vegetation. They may live in the ground litter and hide under logs and rocks or piles of leaves. Nothing else is known about their ecological preferences.

Diet, foraging strategies, sexual behaviour, and reproductive cycles, including larvae, of *Habutarus* are completely unknown. Since their mouth parts are not specialised in any way, these beetles are probably generalists, eating any small insects, spiders, worms and other invertebrates that they are able to subdue.

Apart from the pilose and rather convex New Guinean *H. pilosus*, all species of *Habutarus* are morphologically rather uniform, apart from a certain degree of variability in body size and shape. Most species are uniformly black or dark piceous, but a few bear a more striking colour and/or pattern.

SYSTEMATICS

Habutarus Ball & Hilchie, 1983

Habutarus Ball & Hilchie, 1983: 127 (as subgenus of *Cymindioidea* Castelnau); Lorenz, 1998: 439; 2005: 465 (as genus).

TYPE SPECIES. *Nototarus papua* Darlington, 1968, by monotypy.

DIAGNOSIS. Characters of subtribe Apenina, see Ball & Hilchie (1983) and Lorenz (1998, 2005); genus characterised by medium size; depressed body; wide head bearing rather large eyes; presence of a number of coarsely punctate longitudinal furrows on frons inside of eyes; elongate, bisetose ligula; a well developed, triangular mental tooth; cordiform pronotum bearing dentiform, projecting basal angles; wide elytra bearing well impressed striae; short metathorax due to reduction of flight wings; tarsi pilose on upper surface; denticulate tarsal claws bearing 4 denticles of moderate size; male anterior tarsus little widened with biserially squamose 1st-3rd tarsomeres; bisetose male and quadrisetose female terminal abdominal sternum; elongate male aedeagus bearing an elongate, basally twisted, about question mark-shaped sclerite and a long filum almost twice as long as aedeagus measured from the sclerite and standing out of ostium; apenine-shaped female stylomeres Ball & Hilchie (1983) with stylomere 1 asetose at apex but bearing a spinose projection at median side, and stylomere 2 bearing a large dorso-median and a single large ventro-lateral ensiform seta, but no apical nematiform seta; lateral basal part of stylomere 2 characteristically angulate.

Species of *Habutarus* differ mainly in size and in the microstructure of the upper body surface. This varies from very rugose to largely glabrous on the head and pronotum, and glossy to obviously

microreticulate on the elytra. The basic structure of the male aedeagus and, in particular, the female stylomeres are very similar in all species.

On the basis of the shape of aedeagus, and to a certain degree also body size, two species-groups can be differentiated within *Habutarus* s. str., the *crassiceps*-group that includes large species with the aedeagus more thickly sclerotised and bearing a well developed apical hook, and the *papua*-group that is composed of mostly smaller species having a more delicate, less sclerotised aedeagus with a straight apex.

Those characters that are similar in all species (metepisternum, flight wings, structure of the tarsi, terminal abdominal sternite, structure of the internal sac in the male and of the stylomeres in the female) are not repeated in the descriptions.

DISTRIBUTION. The 23 recorded species are distributed through eastern New Guinea and northern and north-eastern Australia, but the *crassiceps*-group is known only from eastern Australia, and the subgenus *Setitarus* only from Papua New Guinea.

KEY TO SPECIES OF *HABUTARUS*

1. Whole surface covered by sparse, erect pilosity, very glossy, without any trace of microreticulation; eyes smaller than usual, but markedly protruding laterally; aedeagus markedly curved, with thickened apex, genital ring laterally convex (Fig. 7D). Central PNG (subgenus *Setitarus* nov.) *pilosus* (Baehr)
Surface impilose, less glossy, usually with traces of microreticulation; eyes large, but laterally not much protruding; aedeagus less curved, genital ring narrower, laterally less convex (see Figs 2, 5, 7) (subgenus *Habutarus* s. str.) 2
2. Legs completely dark and pronotum with very coarse and dense punctation and head with extremely coarse and dense striation and body length 7.0-8.5mm; aedeagus with club-shaped hook at apex (Fig. 5F). South-eastern QLD *crassiceps* (Macleay)
Legs not completely dark, usually completely yellow or light red; when femora darkened, then pronotum with sparse and less coarse punctation and head with far less coarse and dense striation and body length < 5.5mm and aedeagus not hooked at apex and distribution different: northern NT 3
3. Intervals of elytra distinctly tectiform, with dense and distinct microreticulation, but without perceptible punctation, surface dull; body length 5-6mm 4
Intervals of elytra not distinctly tectiform, usually with less dense and distinct microreticulation, with perceptible punctation or not, but surface almost always less dull; body length varied 6
4. Apical angles of pronotum moderately protruded; elytral striae barely punctate; apex of aedeagus with slightly less incised lower surface (Fig. 2E). Southern rim of Arnhem Land *demarzi* sp. nov.

- Apical angles of pronotum markedly protruded; elytral striae conspicuously punctate; apex of aedeagus with slightly more incised lower surface (Figs 2D, F).5
5. Pronotum anteriorly wider, more cordiform, ratio $w/l > 1.27$, lateral margin wider, more explanate; elytra with distinct yellow margin; apex of aedeagus slightly shorter, less incised on lower surface (Fig. 2F). Kakadu NP *canaliculatus* sp. nov.
- Pronotum anteriorly narrower, less cordiform, ratio $w/l < 1.24$, lateral margin narrow, not explanate; elytra without distinct yellow margin; apex of aedeagus slightly longer, more incised on lower surface (Fig. 2D). Northern and north-western NT. *morosus* (Sloane)
6. Femora perceptibly darker than tibiae and centre of head barely punctate and centre of pronotum impunctate or punctate but punctation sparse and regular. Northern NT7
- Femora yellow or light red, not darker than tibiae; punctation of head and pronotum variable. Distribution different: either eastern QLD or PNG8
7. Elytra with coarse, irregular punctation, punctures in some areas forming transverse or oblique furrows, surface rather dull; pronotum wider and shorter, less cordiform, ratio w/l 1.32; aedeagus unknown. Southern rim of Arnhem Land. *rugosipennis* sp. nov.
- Elytra barely punctate, surface glossy and highly sericeous; pronotum narrower and longer, more cordiform, ratio w/l 1.29; aedeagus unknown. Kakadu NP *convexipennis* sp. nov.
8. Head and pronotum with dense and very rugose, in some areas furrow-like, punctation and elytra with distinct microreticulation and rather dull surface. Mountains and tablelands south of Townsville.9
- At least pronotum with less dense and far less rugose punctation that is furrow-like only on head; elytra rarely with fairly distinct microreticulation but always with rather glossy surface. Mountains and tablelands north of Townsville, and PNG12
9. Colour of elytra red and somewhat variegated; each elytron quadripunctate; aedeagus unknown. Eungella Plateau and environs, west of Mackay. *eungellae* sp. nov.
- Colour of elytra unicolourous black; each elytron bipunctate10
10. Body size < 6.5 mm; elytra very dull; apex of aedeagus not definitely hooked, only thickened (Fig. 7A). Mt Abbot west of Bowen *abboti* sp. nov.
- Body size > 8 mm; elytra less dull; apex of aedeagus definitely hooked (Figs 5G-H).11
11. Head and pronotum wider, ratio w/l of pronotum 1.27; eyes smaller in comparison to orbits, ratio eye/orbit c. 1.4; elytra shorter and wider, more oviform, ratio l/w 1.43; punctation of intervals distinct; apex of aedeagus slightly longer (Fig. 5G). Kroombit Tops, south-west of Calliope *laticeps* sp. nov.
- Head and pronotum narrower, ratio w/l of pronotum 1.24; eyes larger in comparison to orbits, ratio eye/orbit c. 2.5; elytra longer and narrower, less oviform, ratio l/w 1.50; punctation of intervals barely visible; apex of aedeagus slightly shorter (Fig. 5H). Carmila, south of Mackay. *parviceps* sp. nov.
12. Centre of head not striate, only finely and sparsely punctate13
- Centre of head perceptibly striate and coarsely punctate15
13. Body size < 5.5 mm; disc of pronotum finely punctate; elytra glossy black with more or less distinct yellow border; apex of aedeagus elongate, but not hooked (Fig. 2H). Northern Cape York Peninsula *monteilii* sp. nov.
- Body size > 7 mm; disc of pronotum almost impunctate; elytra shining piceous; apex of aedeagus either short (Fig. 5E), or hooked (Fig. 7B). Distribution different14
14. Pronotum wider, ratio $w/l > 1.23$; setiferous punctures on 3rd interval impressed, wider and deeper than usual; aedeagus with distinct apical hook (Fig. 7B). Carbine Tableland *nitidicollis* sp. nov.
- Pronotum narrower, ratio $w/l < 1.20$; setiferous punctures on 3rd interval normal, not deeply impressed; aedeagus with simple apex (Fig. 5E). Kirrama Range, south-west of Tully. *kirramae* sp. nov.
15. Disc of pronotum perceptibly microreticulate; either elytra short and wide, oviform, and species from PNG, or elytra light brown with lighter humeri, remarkably sericeous, and with large setiferous punctures.16
- Disc of pronotum not microreticulate; elytra always rather elongate and less oviform, black or bronzed, but not sericeous. Northern QLD.19
16. Elytra not oviform, red-brown with lighter humeri, remarkably sericeous, and with large setiferous punctures, intervals depressed; centre of pronotum punctate; aedeagus with hook-shaped apex (Fig. 7C). Mt Finnigan and mountains west of Cape Tribulation, northern QLD *iridipennis* sp. nov.
- Elytra oviform, colour varied but never obviously sericeous, setiferous punctures small, intervals convex; centre of pronotum barely punctate; aedeagus with unarmed apex. PNG17
17. Elytra bienlourous, disc piceous, humeri and lateral margins perceptibly lighter; apex of aedeagus short and stout (Fig. 2A). Dobodura, Oro Prov., Papua Peninsula *papua* (Darlington)
- Elytra unicolourous black; apex of aedeagus longer and less stout (Figs 2B-C). Distribution different18
18. Body size > 5 mm; elytra shorter and wider, ratio $l/w < 1.39$, dorsally less convex; punctation of intervals rather distinct; aedeagus thicker, apex longer (Fig. 2B). Vicinity of Wau, Morobe Prov. *wau* sp. nov.
- Body size < 4.5 mm; elytra longer and narrower, ratio l/w 1.44, dorsally more convex; punctation of intervals indistinct; aedeagus slender, apex shorter (Fig. 2C). Vicinity of Madang, Madang Prov. *madang* sp. nov.
19. Microreticulation of elytra distinct, surface rather dull; aedeagus slender, with straight apex (Fig. 2G). Hann Tableland, northwest of Cairns *opacipennis* sp. nov.
- Microreticulation of elytra absent, surface very glossy; apex of aedeagus either hooked, or variously bent, rarely straight20
20. Elytra piceous; punctation of elytral intervals indistinct, barely visible; pronotum with narrower base, with less produced apical angles, ratio widest diameter/base > 1.35 ; apex of aedeagus at tip slightly bent down, left paramere bi-impressed near apex (Fig. 5D). Mountains near Cooktown *calderi* sp. nov.
- Elytra black; punctation of elytral intervals distinct; pronotum with wider base, with markedly produced apical angles, ratio widest diameter/base < 1.33 ; aedeagus different. Distribution different21
21. Punctation of intervals very distinct, easily recognised, surface of elytra less iridescent; apical angles of pronotum

- rather acute; apex of aedeagus impressed (Figs 5A-B) 22
Punctuation of intervals less distinct, more difficult to
recognise, surface of elytra remarkably iridescent;
apical angles of pronotum rounded; apex of aedeagus not
impressed (Fig. 5C). Mellwraith Range, lower Cape York
Peninsula *weiri* sp. nov.
22. Body size slightly larger (length > 6mm); pronotum
anteriorly more curved inwards, with narrower base,
ratio widest diameter/base > 1.32; apex of aedeagus
shorter and thicker (Fig. 5A). Cairns and vicinity
..... *punctatipennis* sp. nov.
- Body size slightly smaller (length 5.65mm); pronotum
anteriorly less curved inwards, with wider base, ratio
widest diameter/base 1.29; apex of aedeagus longer and
very slender (Fig. 5B). Vicinity of Chillagoe, inland
northern QLD. *chillagoensis* sp. nov.

PAPUA-GROUP

Generally small species, bearing a moderately
sclerotised aedeagus with the apex straight, never
hook-shaped.

Habutarus papua (Darlington, 1968) (FIGS 1A, 2A, 8, 9)

Nototarus papua Darlington, 1968: 186.

Habutarus papua (Darlington). Ball & Hilchie, 1983: 127,
Fig. 40; Lorenz, 1998: 439; 2005: 465.

MATERIAL. HOLOTYPE: ♂, Dobodura Papua N.G.
Mar-July, 1944 Darlington / Holotype *Nototarus papua*
Darl. / MCZ Holotype 31491 (MCZ). PARATYPES:
2♂♂, 3♀♀, same data / one ♂ labelled: *Cymindoidea*
(*Habutarus*) *papua* Darl. Det. George E. Ball 1990
(CBM, MCZ).

DIAGNOSIS. Distinguished from other New
Guinean species by colouration and the very
indistinct punctuation of elytra.

REDESCRIPTION. For comparison with the
new species some characters are redescribed.

Measurements. (Table 1) Length: 4.9-5.2mm;
width: 1.95-2.1mm. Ratios. Length eye/orbit: 2.2-
2.4; width/length of pronotum: 1.28-1.31; width
widest diameter/base of pronotum: 1.43-1.44;
width pronotum/head: 1.22-1.24; length/width
of elytra: 1.37-1.41; width elytra/pronotum:
1.43-1.45.

Colour. (Fig. 8) Head and pronotum black,
labrum red. Anterior part of lateral margins of
pronotum narrowly and more or less distinctly
red. Elytra piceous, though humeral area and
epipleura red, elytra distinctly lighter than fore
body, very glossy. Palpi and antennae light red.
Legs yellow.

Head. Large, with fairly large, moderately
protruding eyes with length slightly more than

twice that of orbits. Mentum with acute median
tooth. Apical palpomere of ♀ labial palpus about
half as wide as long, in ♂ markedly securiform.
Antenna short, just attaining base of pronotum.
Head dorsal surface with coarse and dense
longitudinal striae shortened anteriorly and
posteriorly and in middle of frons less distinct,
and with scattered punctures. Microreticulation
distinct, isodiametric, visible medially but not
laterally. Surface rather glossy.

Pronotum. Wide and cordiform, surface depressed.
Apex shallowly excised, base in middle produced.
Apical angles projecting though rounded. Lateral
margins evenly convex, not sinuate posteriorly
but basal angles projecting as minute denticles.
Base laterally oblique and excised. Apex mostly
marginated apart from a narrow space in middle,
base marginated throughout, but in middle
margin fine. Median line deep and sulcate.
Basal impressions lacking. Lateral margin
narrow throughout. Disc sparsely and finely
punctate, without distinct transverse striae,
punctuation laterally denser and slightly coarser.
Microreticulation isodiametric, distinct, though
somewhat superficial, surface moderately dull.

Elytra. Comparatively short and wide, relatively
convex, clearly widened towards apex. Basal
angles projecting but evenly rounded. Apical
margin oblique, slightly excised. Lateral channel
very narrow. Striae impressed, complete, moder-
ately deep, finely crenulate. Intervals very slightly
convex, each with an irregular and sparse row of
very fine punctures that are difficult to detect, and
with superficial, transverse microreticulation,
surface glossy. 3rd interval bipunctate, punctures
coarse, the anterior one situated in centre of
interval, slightly in front of middle, the posterior
one near 3rd stria at apical third, but location
irregular.

Ventral surface. Prosternum and proepisternum
rather coarsely, but superficially punctate-striolate
and with distinct microreticulation, prosternum
also sparsely pilose; mesothorax, metathorax, and
abdomen almost impunctate but microreticulate.

Male genitalia. (Fig. 2A) Rather large in
comparison to body size. Genital ring narrow, very
slightly asymmetric. Base rather deep. Aedeagus
compact, slightly asymmetric, orifice short,
situated on left side. Lower surface very slightly
concave, apex short and stout, straight, obtuse
at tip. Parameres very dissimilar, asetose, left one
large, wide, triangular, right one small, moderately
clongate.

Female genitalia. (Fig. 8) See genus diagnosis.

Variation. No significant variation noted.

COLLECTING CIRCUMSTANCES. According to Darlington (1968: 186) the type series was collected 'in flood debris from the floor of rain forest'.

DISTRIBUTION. (Fig. 9) Eastern Papua New Guinea, known only from type locality.

RELATIONSHIPS. Related to other New Guinean species, though these other species are likely more closely related to each other than to *H. papua*.

***Habutarus wau* sp. nov.**
(Figs 1B, 2B, 9)

ETYMOLOGY. The name refers to the type locality, the vicinity of Wau.

MATERIAL. HOLOTYPE: ♂, PAPUA NG: Morobe, Mt Kaindi, 1700m, 25.V.1992, G. Cuccodoro #8A (MHNG). PARATYPES: 1♂, PAPUA NG: Morobe, Mt Mission, Bitoi Rd, 1350m, 22.V.1992, G. Cuccodoro #68 (CBM); 1♀, NEW GUINEA/N/ Wau, 8.IX.1968// No.NG-W.R.19/leg. Dr. I. Lokes (HNMB).

DIAGNOSIS. Distinguished from other New Guinean species either by its larger size and distinctly shorter and wider elytra (from *H. madang* sp. nov.) or by its uniformly black colour and distinct elytral punctation (from *H. papua* (Darlington)).

DESCRIPTION. *Measurements* (Table 1). Length: 5.5-5.6mm; width: 2.1-2.2mm. Ratios. Length eye/orbit: 1.7-1.9; width/length of pronotum: 1.23-1.26; width widest diameter/base of pronotum: 1.34-1.40; width pronotum/head: 1.17-1.21; length/width of elytra: 1.34-1.39; width elytra/pronotum: 1.46-1.51.

Colour. (Fig. 1B) Body uniformly black. Palpi, antennae and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are almost twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex less than half as wide as long, in ♂ securiform but apex less wide than in most other species. Antenna short, just attaining base of pronotum. Dorsal surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with sparse, moderately coarse punctures but without any striae. Superficial isodiametric microreticulation visible in middle but not laterally. Surface glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined except near apical angles, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc sparsely and finely punctate, almost glossy, without distinct transverse striae. Only at apex, base, and near lateral margin punctation coarser and denser. Superficial traces of microreticulation visible at high magnification, surface very glossy.

Elytra. Comparatively wide, moderately depressed, clearly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely crenulate. Intervals very slightly convex, median ones almost depressed, each with a well visible, irregular row of fairly coarse punctures and with superficial, isodiametric microreticulation that is visible only at high magnification, surface fairly glossy. 3rd interval bipunctate, punctures coarse, situated in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum very sparsely punctate, latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. (Fig. 2B) Rather large in comparison to body size. Genital ring narrow, barely asymmetric. Base rather deep. Aedeagus compact, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex fairly elongate, straight, fairly acute at tip. Parameres very dissimilar, aetose, left one large, wide, triangular, right one small, moderately elongate.

Variation. Very little variation noted.

COLLECTING CIRCUMSTANCES. Largely unknown. So far collected at medium altitudes between about 1300 and 1700m.

DISTRIBUTION (FIG. 9). Vicinity of Wau, eastern central Papua New Guinea.

RELATIONSHIPS. Probably more closely related to *H. madang* sp. nov. than to *H. papua*.

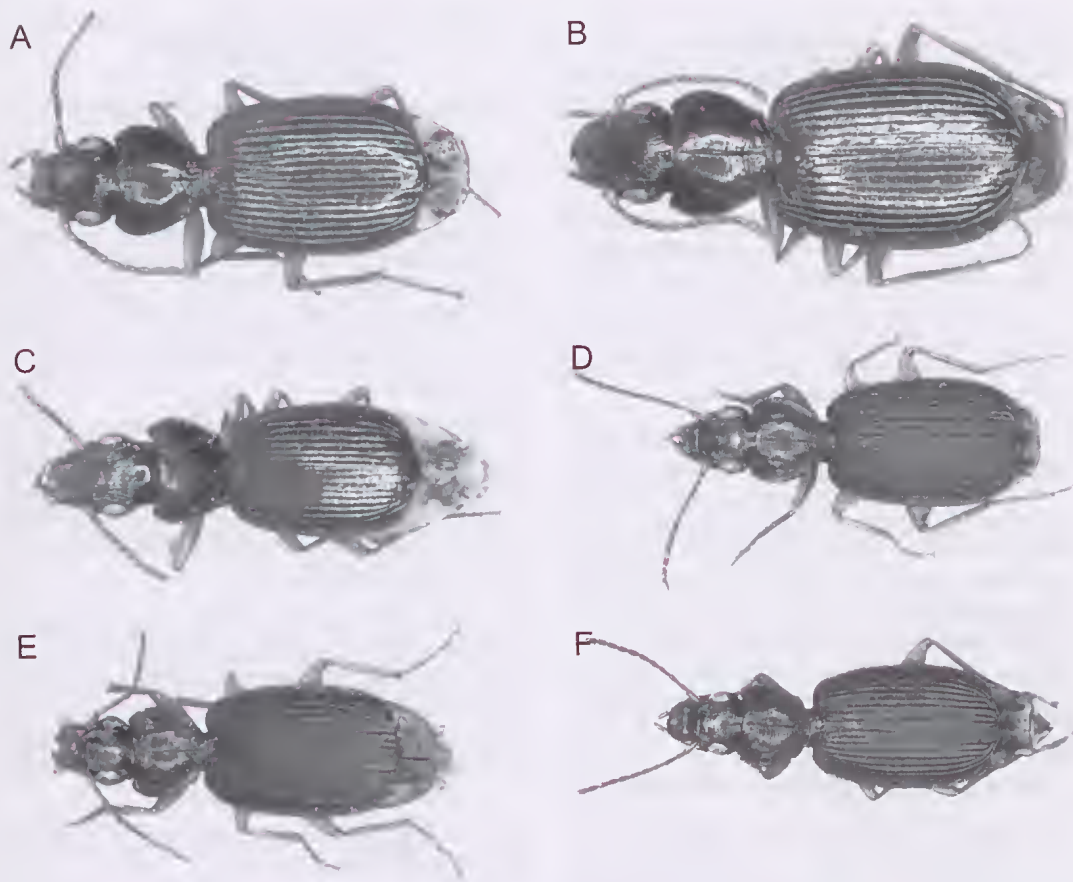


FIG. 1. Dorsal views of *Habutarus* spp. (body length in brackets). A, *H. papua* (Darlington) (4.9mm); B, *H. wau* sp. nov. (5.5mm); C, *H. madang* sp. nov. (4.4mm); D, *H. morosus* (Sloane) (5.0mm); E, *H. demarzi* sp. nov. (6.0mm); F, *H. canaliculatus* sp. nov. (6.0mm).

***Habutarus madang* sp. nov.**
(Figs 1C, 2C, 9)

ETYMOLOGY. The name refers to the province of the type locality.

MATERIAL. HOLOTYPE: ♂, Coll. I.R.Sc.N.B. Papua New Guinea, Kalagima river, Madang prov., coconut + cacao plant, wet leaf litter, I.G: 26373, 21.V.1981, Leg. J. Van Goethem (IRSNB).

DIAGNOSIS. Distinguished from the other two New Guinean species of the *papua*-group by its smaller size and longer and narrower elytra.

DESCRIPTION. Measurements. (Table 1). Length: 4.4mm; width: 1.7mm. Ratios. Length eye/orbit: 2.2; width/length of pronotum: 1.29; width widest diameter/base of pronotum: 1.43; width pronotum/head: 1.21; length/width of elytra: 1.44; width elytra/pronotum: 1.44.

Colour. (Fig. 1C) Whole dorsal surface almost black. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are slightly more than twice length of orbits. Mentum with acute median tooth. Labial palpus in ♂ securiform but apex less wide than in most other species. Antenna short, barely attaining base of pronotum. Upper surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with sparse, moderately coarse punctures but without any striae. Superficial, isodiametric microreticulation visible. Surface fairly glossy.

Pronotum. Wide and cordiform, surface moderately convex. Apex slightly excised, base in middle produced. Apical angles projecting

though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined except for the lateral parts close to apical angles, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin very narrow throughout. Most of disc very sparsely and finely punctate, almost glossy, with superficial transverse striae only laterally. At apex, base and near lateral margin punctation slightly coarser and denser. Isodiametric microreticulation comparatively distinct, surface moderately glossy.

Elytra. Comparatively narrow and elongate, fairly depressed, very slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely erenulate. Intervals very slightly convex, each with an irregular row of fine punctures and with superficial, though fairly distinct, isodiametric to slightly transverse microreticulation, surface moderately glossy. 3rd interval bipunctate, punctures coarse, situated in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third.

Ventral surface. Prosternum and proepisternum sparsely but coarsely punctate and striolate, with distinct microreticulation, rather dull, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate, glossier.

Male genitalia. (Fig. 2C) Rather large in comparison to body size. Genital ring narrow, very slightly asymmetric. Base rather deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface slightly concave, apex fairly elongate, straight, fairly acute at tip. Parameres very dissimilar, aetose, left one large, short and wide, triangular, right one small, rather short.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. The single specimen was collected in 'coconut + cacao plant, wet leaf litter', which is in a secondary habitat. Nothing is known about the altitudinal range occupied by this species.

DISTRIBUTION. (Fig. 9) Madang Province, northern Papua New Guinea. Known only from the type locality.

RELATIONSHIPS. Probably more closely related to *H. wau* sp. nov. than to *H. papua*.

Habutarus morosus (Sloane, 1915), comb. nov.
(Figs 1D, 2D, 10)

Nototarus morosus Sloane, 1915: 470; Csiki 1932: 1492; Moore et al. 1987: 308; Lorenz 1998: 471; 2005: 497.

MATERIAL. HOLOTYPE: ♂, Pt. Darwin Dodd '08 / *Nototarus morosus* Sl. Type / HOLOTYPE *Nototarus morosus* Sl. PJD (ANIC). NEW MATERIAL: (1 specimen): NORTHERN TERRITORY, 1♀, 16.00S 130.28E NT GPS 13.5km NNE Bullita, Gregory Nat. Pk, 20 May 2001 T. Weir, P. Bouchard / surfaces at night (ANIC).

DIAGNOSIS. Immediately distinguished from all other species except *H. canaliculatus* sp. nov. and *H. demarzi* sp. nov. by its carinate elytral striae. From both latter species it is distinguished by a narrower pronotum and the uniformly dark lateral margins of the elytra.

DESCRIPTION. *Measurements*. (Table 1) Length: 5.0mm; width: 1.95-2.0mm. Ratios. Length eye/orbit: 3.1-3.2; width/length of pronotum: 1.23-1.24; width widest diameter/base of pronotum: 1.28-1.33; width pronotum/head: 1.23-1.25; length/width of elytra: 1.51-1.52; width elytra/pronotum: 1.47-1.48.

Colour. (Fig. 1D) Body uniformly black. Palpi, antennae, and legs light red.

Head. Large, with large, moderately protruding eyes that are about 3 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ unknown. Antenna medium sized, surpassing base of pronotum by about one antennomere. Upper surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with fairly dense, moderately coarse punctures that combine to form some short, superficial striae on vertex. Superficial isodiametric microreticulation visible in middle but not laterally. Surface moderately glossy.

Pronotum. Moderately wide, cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions

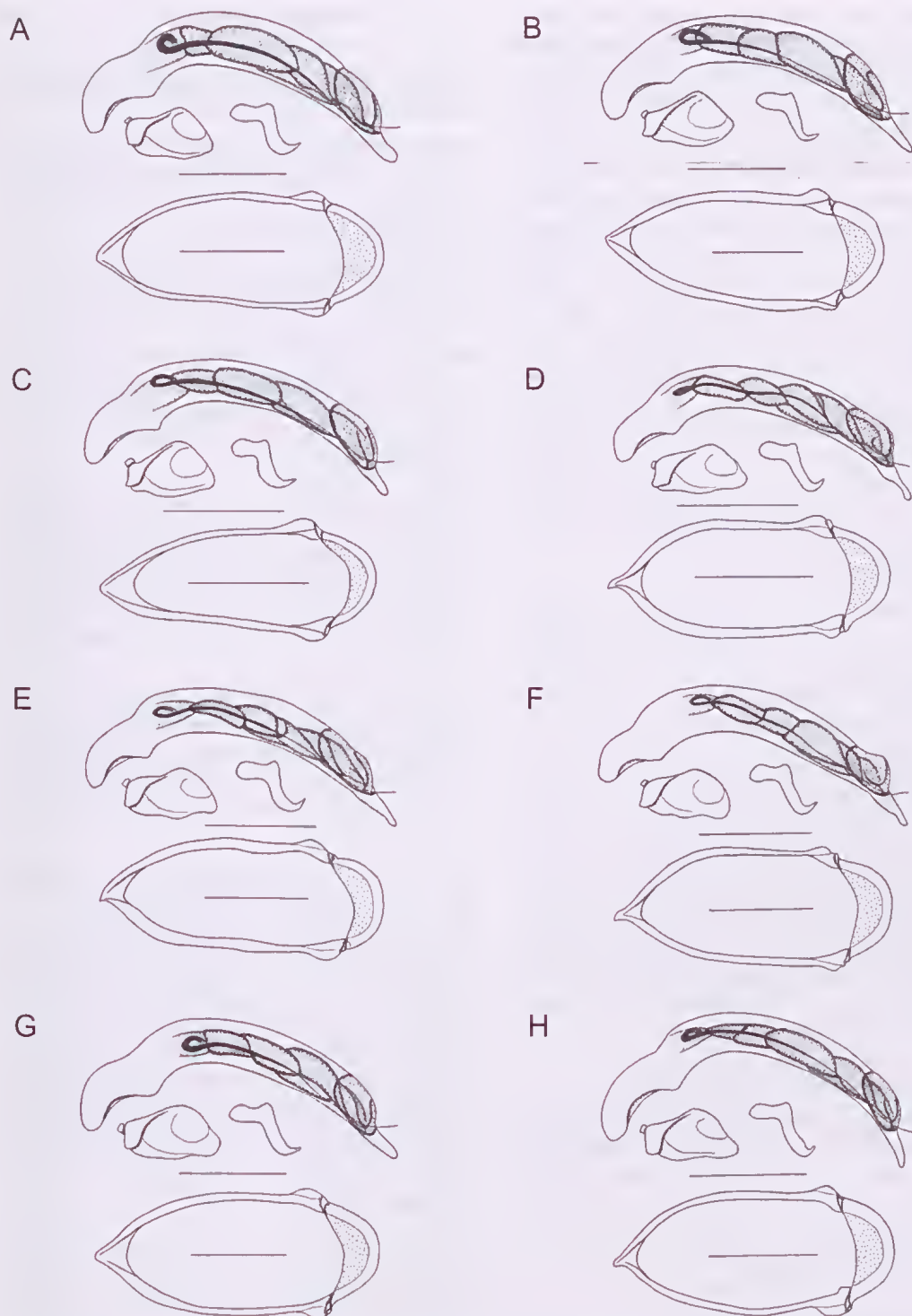


FIG. 2. Male genitalia of *Habutarus* spp. showing aedeagus (upper), parameres (centre) and genital ring (lower), scale 0.5mm. A, *H. papua* (Darlington); B, *H. wau* sp. nov.; C, *H. madang* sp. nov.; D, *H. morosus* (Sloane); E, *H. demarzi* sp. nov.; F, *H. canaliculatus* sp. nov.; G, *H. opacipennis* sp. nov.; H, *H. monteithi* sp. nov.

lacking. Lateral margin narrow throughout. Surface densely punctate and striolate, though laterally and near base punctation even coarser and denser. Superficial traces of microreticulation visible, surface moderately glossy.

Elytra. Rather narrow and elongate, depressed, widest at middle. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely erenulate. Intervals convex, tectiform, with very distinct, isodiametric microreticulation, each apparently with an irregular row of punctures that are extremely difficult to detect within microreticulation, surface very dull. 3rd interval bipunctate, punctures coarse, though rather difficult to detect, situated about in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum rather coarsely punctate and striolate, and with superficial microreticulation, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate and glossier.

Male genitalia. (Fig. 2D) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base rather deep. Aedeagus narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex elongate, straight, very slightly widened at tip. Parameres very dissimilar, ascotose, left one large, elongate, rather triangular, right one small, moderately elongate.

Variation. Very little variation noted.

COLLECTING CIRCUMSTANCES. The non-type specimen was captured 'on surfaces at night', probably by searching the ground using a torch.

DISTRIBUTION. (Fig. 10) Far northern and north-western Northern Territory.

RELATIONSHIPS. Together with *H. demarzi* sp. nov. and *H. canaliculatus* sp. nov., this species forms a closely related group restricted to the northern part of the Northern Territory.

***Habutarus demarzi* sp. nov.**
(Figs 1E, 2E, 10)

ETYMOLOGY. The name is a patronym in honour of the collector of the holotype.

MATERIAL. Holotype: ♂, Austral. North. T. Beswick, 1.1958, leg. H. Demarz (CBM). PARATYPE: 1♀, Nitmiluk Nat. Park, Katherine Gorge, 19-26.III.1996, P. M. Giachino / *Anomotarus* sp. Det. P. M. Giachino 1998 (MSNT).

DIAGNOSIS. Immediately distinguished from all other species except *H. morosus* and *H. canaliculatus* by the carinate elytral striae. Distinguished from *H. morosus* by a wider pronotum and the yellow lateral margins of the elytra, and from *H. canaliculatus* by less strongly projecting apical angles of the pronotum and far less coarsely punctate elytral striae.

DESCRIPTION. *Measurements* (Table 1). Length: 5.8-6.0mm; width: 2.2-2.3mm. Ratios. Length eye/orbit: 2.8-3.0; width/length of pronotum: 1.26-1.28; width widest diameter/base of pronotum: 1.27-1.30; width pronotum/head: 1.25-1.27; length/width of elytra: 1.49-1.51; width elytra/pronotum: 1.49-1.50.

Colour: (Fig. 1E) Surface unicolourous black, though labrum and apical margin of clypeus red. Lateral margins of pronotum inconspicuously and lateral margin of elytra distinctly red. Epipleura of elytra red. Palpi and antennae red, legs light red.

Head. Large, with large, moderately protruding eyes that are about 3 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ remarkably securiform. Antenna medium-sized, surpassing base of pronotum by about one antennomere. Upper surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with fairly dense, moderately coarse punctures that combine to form some short, superficial striae on vertex. Superficial isodiametric microreticulation visible in middle but not laterally. Surface moderately glossy.

Pronotum. Rather wide, cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles little projecting, rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median

line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface densely punctate and striolate, though laterally and near base punctation even coarser and denser. More or less distinct traces of microreticulation visible, surface moderately glossy.

Elytra. Rather narrow and elongate, depressed, widest at middle. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel rather narrow. Striae impressed, complete, moderately deep, very finely crenulate. Intervals convex, tectiform, with very distinct, isodiametric microreticulation, each

apparently with an irregular row of punctures that are extremely difficult to detect within microreticulation, surface very dull. 3rd interval bipunctate, punctures coarse, though rather difficult to detect, situated about in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum rather coarsely punctate and striolate, and with superficial microreticulation, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate and glossier.

Male genitalia. (Fig. 2E) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base moderately deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface slightly concave, apex elongate, straight, very slightly widened at tip. Parameres very dissimilar, asetose, left one large, elongate, rather triangular, right one small, moderately elongate.

Variation. Apart from some differences in relative shape of pronotum, very little variation noted.

COLLECTING CIRCUMSTANCES. Unknown.

DISTRIBUTION. (Fig. 10) Southern rim of Arnhem Land, northern Northern Territory.

RELATIONSHIPS. Together with *H. morosus* and *H. canaliculatus* sp. nov. this species forms a closely related group restricted to the northern part of the Northern Territory.

TABLE 1. Body measurements and ratios of *Habutarus* spp. N, number of specimens measured. Note that separate values are given for Mt Finnigan and Cape Tribulation populations of *H. iridipennis* sp. nov. as they are each represented by only a single sex.

	N	Body length (mm)	Ratio length eye/ orbit	Ratio width/ length pronotum
papua	6	4.9-5.2	2.2-2.4	1.28-1.31
wau	3	5.5-5.6	1.7-1.9	1.23-1.26
madang	1	4.4	2.2	1.29
morosus	2	5.0	3.1-3.2	1.23-1.24
demarzi	2	5.8-6.0	2.8-3.0	1.26-1.28
canaliculatus	5	5.2-6.0	2.7-3.0	1.27-1.29
rugosipennis	1	5.0	2.8	1.32
opacipennis	1	5.9	2.3	1.22
monteithi	2	5.3-5.4	2.3-2.4	1.25-1.27
punctatipennis	3	6.0-6.1	2.0-2.2	1.19-1.22
chillagoensis	1	5.65	2.05	1.22
weiri	3	5.9-6.1	2.1-2.3	1.24-1.27
calderi	6	4.8-6.0	2.0-2.2	1.20-1.23
kirramae	3	6.4-6.9	1.6-1.8	1.15-1.20
convexipennis	1	5.25	2.0	1.29
crassiceps	10	6.8-8.4	1.5-2.2	1.29-1.37
laticeps	1	8.7	1.4	1.27
parviceps	1	8.6	2.5	1.24
abboti	3	6.0-6.3	2.5-2.6	1.26-1.30
nitidicollis	6	6.6-7.7	1.8-2.0	1.23-1.28
iridipennis ♂ (C. Tribulation)	5	5.35-5.5	2.2-2.3	1.20-1.27
iridipennis ♀ (Mt Finnigan)	3	5.2-6.1	1.7-1.8	1.19-1.25
eungellae	2	7.0-7.2	1.9-2.2	1.34-1.38
pilosus	1	6.8	1.6	1.22
	Ratio widest diameter/base pronotum	Ratio diameter/ base pronotum/ head	Ratio length/ width elytra	Ratio width elytra/pronotum
papua	1.43-1.44	1.22-1.24	1.37-1.41	1.43-1.45
wau	1.34-1.40	1.17-1.21	1.34-1.39	1.46-1.51
madang	1.43	1.21	1.44	1.44
morosus	1.29-1.33	1.23-1.25	1.51-1.52	1.47-1.48
demarzi	1.27-1.30	1.25-1.27	1.49-1.51	1.49-1.50
canaliculatus	1.30-1.33	1.26-1.30	1.50-1.53	1.46-1.51
rugosipennis	1.31	1.23	1.44	1.47
opacipennis	1.32	1.23	1.47	1.44
monteithi	1.39-1.41	1.26-1.27	1.49-1.50	1.42-1.44
punctatipennis	1.32-1.33	1.21-1.25	1.50-1.51	1.45-1.49
chillagoensis	1.29	1.26	1.51	1.48
weiri	1.30-1.33	1.28-1.31	1.46-1.51	1.40-1.42
calderi	1.34-1.39	1.19-1.25	1.47-1.52	1.44-1.52
kirramae	1.33-1.36	1.21-1.25	1.48-1.50	1.45-1.52
convexipennis	1.36	1.29	1.42	1.44
crassiceps	1.36-1.44	1.26-1.32	1.37-1.45	1.35-1.44
laticeps	1.35	1.24	1.43	1.40
parviceps	1.37	1.21	1.50	1.41
abboti	1.38-1.39	1.27-1.28	1.39-1.42	1.43-1.48
nitidicollis	1.39-1.44	1.23-1.29	1.46-1.50	1.41-1.47
iridipennis ♂ (C. Tribulation)	1.38-1.44	1.19-1.22	1.43-1.46	1.41-1.46
iridipennis ♀ (Mt Finnigan)	1.39-1.41	1.21-1.26	1.38-1.40	1.46-1.51
eungellae	1.38-1.43	1.32	1.39-1.41	1.39-1.40
pilosus	1.36	1.21	1.36	1.42

***Habutarus canaliculatus* sp. nov.**
(Figs 1F, 2F, 10)

ETYMOLOGY. The name refers to the deeply impressed elytral striae.

MATERIAL, HOLOTYPE: ♂, NT, 2.5km NE Jabiru East, East Magela Grassland, Litter Sample; 2 April 1982, M. D. Armstrong (SAMA). **PARATYPES:** 2♂♂, 1♀, same data (CBM, SAMA); 1♂, AUSTRALIA, N. T. Kakadu N.P. Cooida, 25-26/12/96, Leg. L. Toledano, R. Olivieri (CBM).

DIAGNOSIS. Immediately distinguished from all other species except *H. morosus* and *H. demarzi* by the carinate elytral striae. Distinguished from *H. morosus* by a wider pronotum and the yellow lateral margins of the elytra, and from *H. demarzi* by the more strongly projecting apical angles of the pronotum and the far more coarsely punctate elytral striae.

DESCRIPTION. Measurements. (Table 1) Length: 5.2-6.0mm; width: 2.0-2.3mm. Ratios. Length eye/orbit: 2.7-3.0; width/length of pronotum: 1.27-1.29; width widest diameter/base of pronotum: 1.30-1.33; width pronotum/head: 1.26-1.30; length/width of elytra: 1.50-1.53; width elytra/pronotum: 1.46-1.51.

Colour. (Fig. 1F) Surface unicolourous black, or elytra and sometimes also pronotum more or less dark piccous, though labrum and apical margin of clypeus red. Lateral margins of pronotum less conspicuously and lateral margins of elytra distinctly red. Epipleura of elytra red. Palpi and antennae red, legs light red.

Head. Large, with large, moderately protruding eyes that are about 3 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ remarkably securiform. Antenna medium-sized, surpassing base of pronotum by about one antennomere. Upper surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with fairly dense, moderately coarse punctures that combine to form some short, superficial striae on vertex. Superficial isodiametric microreticulation more or less distinct in middle. Surface moderately glossy.

Pronotum. Wide, cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles rather projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised.

Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface densely punctate and striolate, though laterally and near base punctation even coarser and denser. More or less distinct traces of microreticulation visible, surface moderately glossy.

Elytra. Rather narrow and elongate, depressed, widest at middle. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel rather narrow. Striae impressed, complete, moderately deep, rather coarsely crenulate. Intervals convex, tectiform, with very distinct, isodiametric microreticulation, each apparently with an irregular row of punctures that are extremely difficult to detect within microreticulation, surface very dull. 3rd interval bipunctate, punctures coarse, though rather difficult to detect, situated about in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum rather coarsely punctate and striolate, and with superficial microreticulation, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate and glossier.

Male genitalia. (Fig. 2F) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base rather deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, apex moderately elongate, straight, very slightly widened at tip. Parameres very dissimilar, asetose, left one large, elongate, rather triangular, right one small, moderately elongate.

Variation. The only substantial variation encountered was in the size of the eyes relative to the orbits, which seems to exhibit some sexual variation, with males having slightly larger eyes.

COLLECTING CIRCUMSTANCES. Most specimens were captured in 'litter' in tropical wet grassland.

DISTRIBUTION. (Fig. 10) So far known from the northern parts of Kakadu National Park at the eastern margin of Arnhem Land, in far northern Northern Territory.

RELATIONSHIPS. Together with *H. morosus* and *H. demarzi* sp. nov. this species forms a

closely related group restricted to the northern part of the Northern Territory.

***Habutarus rugosipennis* sp. nov.**
(Figs 3A, 10)

ETYMOLOGY. The name refers to the highly rugose elytral intervals.

MATERIAL. HOLOTYPE: ♀, Australia, NT, Katherine Gorge, 15km NE. Katherine, 6.-8.11.1984, M. Baehr (CBM).

DIAGNOSIS. Immediately distinguished from all other species by the combination of a glossy, barely striolate head, glossy pronotum, and the highly rugose punctation of the elytra.

DESCRIPTION. *Measurements.* (Table 1) Length: 5.0mm; width: 1.9mm. Ratios. Length eye/orbit: 2.8; width/length of pronotum: 1.32; width widest diameter/base of pronotum: 1.31; width pronotum/head: 1.23; length/width of elytra: 1.44; width elytra/pronotum: 1.47.

Colour. (Fig. 3A) Head and pronotum glossy black, elytra very dark piceous. Labrum and mandibles dark red. Palpi and antennae red. Legs dirty yellow, but femora slightly infuscate.

Head. Large, with large, moderately protruding eyes that are almost 3 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, unknown in ♂. Antenna short, barely surpassing base of pronotum. Upper surface only near anterior margin of eyes with few coarse longitudinal striae that end about in middle of eyes. Frons and vertex with extremely sparse, rather fine coarse punctures but without any striae. Microreticulation apparently absent. Surface remarkably glossy.

Pronotum. Very wide, cordiform, with comparatively narrow base, surface depressed. Apex slightly excised, base in middle produced. Apical angles little projecting, rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin very fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Disc very sparsely and finely punctate, glossy, without transverse striae. Only at apex, base and near lateral margin punctation coarser and denser and striae present. No traces of microreticulation visible, surface very glossy.

Elytra. Rather wide, moderately depressed, slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, rather deep, barely crenulate. Intervals convex, each with an irregular row of very coarse punctures that are commonly widened to irregular transverse furrows, giving the intervals a remarkably rough and coriaceous appearance. Very superficial microreticulation visible mainly in the bottoms of the punctures, surface fairly glossy. 3rd interval bipunctate, punctures very coarse, though difficult to see within the coarse punctation, situated near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum sparsely and shallowly punctate, glossy, the latter sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. Unknown.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. Collected on the ground near an artificial light at night in open tropical woodland.

DISTRIBUTION. (Fig. 10) Southern rim of Arnhem Land, northern Northern Territory. Known only from the type locality.

RELATIONSHIPS. An isolated species that may be related to the *morosus*-subgroup, but male genitalia must be studied to confirm this.

***Habutarus opacipennis* sp. nov.**
(Figs 3B, 2G, 10)

ETYMOLOGY. The name refers to the rather opaque elytra due to distinct microreticulation.

MATERIAL. HOLOTYPE: ♂, AUST: QLD: NE Hann Tld. Radar Stn. 26 Nov 1998 G. B. Monteith / QM BERLESATE 982, 16°55'S × 145°15'E, Wet Sclerophyll, 950m, Sieved litter / QM Reg. No. 69200 (QM).

DIAGNOSIS. Immediately distinguished from all other species by the distinctly microreticulate but not canaliculate elytra.

DESCRIPTION. *Measurements* (Table 1). Length: 5.9mm; width: 2.25mm. Ratios. Length eye/orbit: 2.3; width/length of pronotum: 1.22; width widest diameter/base of pronotum: 1.32; width pronotum/

head: 1.23; length/width of elytra: 1.47; width elytra/pronotum: 1.44.

Colour. (Fig. 3B) Upper surface unicolourous black, though labrum and apical half of clypeus red. Apical part of margin of pronotum and lateral margins of elytra narrowly red. Epipleurae of elytra red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are almost 2.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♂ markedly securiform, that of ♀ unknown. Antenna short, just attaining base of pronotum. Upper surface with coarse and dense punctation and coarse longitudinal striae. Apparently no microreticulation present. Surface very glossy.

Pronotum. Comparatively narrow, cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc rather densely and coarsely punctate and with transverse striae. At apex, base and near lateral margin punctation even coarser and denser. No traces of microreticulation visible, surface highly glossy.

Elytra. Moderately wide, depressed, widest at middle. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, barely crenulate. Intervals slightly convex, median ones almost depressed, each with an irregular row of rather coarse punctures and with superficial though distinct, more or less isodiametric microreticulation, surface opaque though moderately glossy. 3rd interval bipunctate, punctures coarse, the anterior one situated in middle of interval slightly in front of middle, the posterior one situated near 3rd stria at apical third, but location rather irregular.

Ventral surface. Prosternum and proepisternum rather coarsely punctate, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. (Fig. 2G) Rather large in comparison to body size. Genital ring moderately wide, slightly convex, almost symmetric. Base rather deep. Aedeagus comparatively narrow

and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex elongate, straight, very slightly widened at tip. Parameres very dissimilar, acetose, left one large, elongate, rather triangular, right one small, moderately elongate.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. Sieved from montane wet sclerophyll forest litter at a fairly high altitude of about 950m.

DISTRIBUTION. (Fig. 10) Hann Tableland west of Cairns, north-eastern Queensland. Known only from the type locality.

RELATIONSHIPS. This is a fairly isolated species within the *papua*-group, but is probably most closely related to *H. monteithi* sp. nov.

***Habutarus monteithi* sp. nov.**
(Figs 3C, 2H, 10)

ETYMOLOGY. The name is a patronym in honour of the collector of the holotype.

MATERIAL. HOLOTYPE: ♂, Lake Boronto (=Wincheura), Newcastle Bay, C. York, Qld. Jan30-Feb 4, 1975, G. B. Monteith, Rainforest / Pitfall Trap No. 3/1+3 QMT123615 (QM). PARATYPE: 1 ♀, 12.43S 143.17E 9km ENE of Mt Tozer QLD-10 July 1986 T. Weir / Berlesate ANIC. 1060 rainforest litter (ANIC).

DIAGNOSIS. Medium-sized species with highly iridescent elytra. Distinguished from *H. convexipennis* sp. nov. by longer elytra; from *H. punctatipennis* sp. nov. and *H. chillagoensis* sp. nov. by far less coarse punctation of the elytral intervals; from *H. weiri* sp. nov. by a more cordiform pronotum bearing a narrower base and by its smaller size; from *H. calderi* sp. nov. by a wider pronotum and barely punctate head; and from *H. kirramae* sp. nov. by its smaller size and much wider pronotum.

DESCRIPTION. *Measurements* (Table 1). Length: 5.3-5.4mm; width: 2.0-2.1mm. Ratios. Length eye/orbit: 2.3-2.4; width/length of pronotum: 1.25-1.27; width widest diameter/base of pronotum: 1.39-1.41; width pronotum/head: 1.26-1.27; length/width of elytra: 1.49-1.50; width elytra/pronotum: 1.42-1.44.

Colour. (Fig. 3C) Head and pronotum black, elytra faintly lighter, very dark piceous, distinctly sericeous. Labrum and clypeus dark red. Anterior part of lateral margins of pronotum and lateral

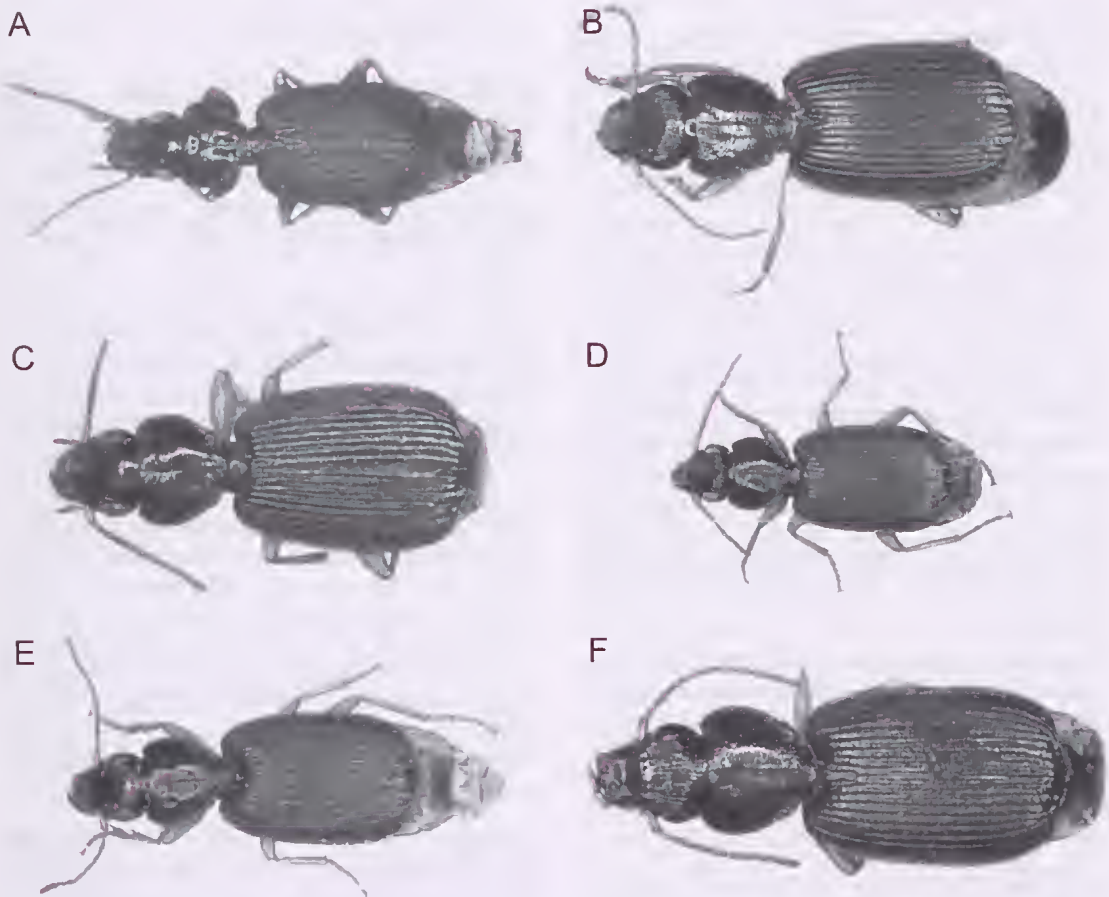


FIG. 3. Dorsal views of *Habutarus* spp. (body length in brackets). A, *H. rugosipennis* sp. nov. (5.0mm); B, *H. opacipennis* sp. nov. (5.9mm); C, *H. monteithi* sp. nov. (5.3mm); D, *H. punctatipennis* sp. nov. (6.0mm); E, *H. chillagoensis* sp. nov. (5.65mm); F, *H. weiri* sp. nov. (5.9mm).

margin of elytra narrowly red. Epipleura red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about 2.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ very securiform. Antenna short, just attaining base of pronotum. Upper surface near eyes with a few coarse longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with very sparse, moderately coarse punctures but without any striae. No microreticulation visible. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles.

Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc very sparsely and finely punctate, almost glossy, without transverse striae. Only at apex, base and near lateral margin punctation coarser and denser and with rather superficial transverse striae. No traces of microreticulation visible, surface very glossy.

Elytra. Moderately wide and depressed, very little widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, rather coarsely punctate-crenulate. Intervals fairly convex, each with an irregular row of moderately fine

punctures that is quite difficult to detect, without any microreticulation. Surface very glossy, highly iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, proepisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 2H) Rather large in comparison to body size. Genital ring moderately wide, only at apex slightly asymmetric. Base moderately deep. Aedeagus narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface slightly concave, apex fairly elongate, straight, rather acute at tip. Parameres very dissimilar, aetose, left one large, elongate, irregularly triangular, right one small, moderately elongate.

Variation. Apart from some differences in colouration that may be due to the teneral condition of the holotype, very little variation was noted.

COLLECTING CIRCUMSTANCES. Collected by pitfall trap and by Berlese extraction of litter in rainforest.

DISTRIBUTION. (Fig. 10) Northern and central Cape York Peninsula from Iron Range to Cape York, northern Queensland.

RELATIONSHIPS. Probably less closely related to the following four species than these *inter se*.

***Habutarus punctatipennis* sp. nov.**
(Figs 3D, 5A, 10)

ETYMOLOGY. The name refers to the coarse punctation of the elytral intervals.

MATERIAL. HOLOTYPE: ♂, Cairns NQ 10/50 GB. / M. 236 / species. det. B. P. Moore '69 / J. G. Brooks Bequest, 1976 (ANIC). PARATYPES: 1 ♀, Cairns. NQ. 10/51 GB. / *crassiceps* Macl. 1457. / *Nototarius* Chaud. 875. / J. G. Brooks Bequest, 1976 (ANIC); 1 ♀, Davies Creek. NQ 10/50 GB / J. G. Brooks Bequest, 1976 (CBM).

DIAGNOSIS. Medium-sized species with highly iridescent elytra. Distinguished from *H. convexipennis* sp. nov. by longer elytra and a narrower pronotum; from all other species apart from *H. chillagoensis* sp. nov. by the coarse punctation of the elytral intervals; from

H. chillagoensis by slightly its larger size and anteriorly wider pronotum.

DESCRIPTION. *Measurements* (Table 1). Length: 6.0-6.1 mm; width: 2.25-2.30 mm. Ratios. Length eye/orbit: 2.0-2.2; width/length of pronotum: 1.19-1.22; width widest diameter/base of pronotum: 1.32-1.33; width pronotum/head: 1.21-1.25; length/width of elytra: 1.50-1.51; width elytra/pronotum: 1.45-1.49.

Colour. (Fig. 3D) Head and pronotum black, elytra very faintly lighter, very dark piceous, highly sericeous. Labrum and apical half of clypeus dark red. Lateral margins of elytra narrowly red. Epipleura red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ markedly securiform. Antenna short, just attaining base of pronotum. Upper surface densely and coarsely punctate and with rather dense, coarse longitudinal striae near eyes. Centre of frons without striae but coarsely punctate, vertex with some irregular, coarse striae. No microreticulation visible. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex moderately excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface densely and coarsely punctate and striolate, lateral parts with coarser and even denser punctation and with even denser transversal striae. No traces of microreticulation visible, surface very glossy.

Elytra. Rather elongate, depressed, widest in middle though laterally almost parallel. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, rather coarsely punctate-crenulate. Intervals fairly convex, each with a clearly visible, irregular row of coarse punctures, without any microreticulation. Surface very glossy, highly iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior

one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, proepisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 5A) Rather large in comparison to body size. Genital ring rather narrow, only at apex slightly asymmetric. Base rather deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface straight, apex rather short, straight, slightly obtuse. Parameres very dissimilar, asetose, left one large, elongate, irregularly triangular, right one small, moderately elongate.

Variation. Apart from slight differences in the relative width of the pronotum, very little variation was noted.

COLLECTING CIRCUMSTANCES. Unknown, but based on the collection localities, probably a rainforest dwelling species.

DISTRIBUTION. (Fig. 10) Vicinity of Cairns, north-eastern Queensland.

RELATIONSHIPS. In view of its shape and structure, this species is most closely related to *H. chillagoensis* sp. nov. from inland northern Queensland.

***Habutarus chillagoensis* sp. nov.**
(Figs 3E, 5B, 11)

ETYMOLOGY. The name refers to the type locality, the town of Chillagoe.

MATERIAL. HOLOTYPE: ♂, QLD, 2km W of Chillagoe 330m, 28/6/71 Decid. Vine Thicket/Berlesate ANIC. 341 Taylor Feehan 17.14x144.30 (ANIC).

DIAGNOSIS. Medium-sized species with highly iridescent elytra. Distinguished from *H. convexipennis* sp. nov. by longer elytra and a narrower pronotum; from all other species apart from *H. punctatipennis* sp. nov. by coarse punctation of the elytral intervals; from *H. punctatipennis* sp. nov. by slightly smaller size and anteriorly narrower pronotum.

DESCRIPTION. *Measurements* (Table 1). Length: 5.65mm; width: 2.15mm. Ratios. Length cyc/orbit: 2.05; width/length of pronotum: 1.22; width widest diameter/base of pronotum: 1.29; width pronotum/

head: 1.26; length/width of elytra: 1.51; width elytra/pronotum: 1.48.

Colour. (Fig. 3E) Head and pronotum black, elytra very faintly lighter, very dark piceous, highly sericeous. Labrum and apical half of clypeus dark red. Lateral margins of elytra narrowly red. Epipleura red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♂ highly securiform, that of ♀ unknown. Antenna short, just attaining base of pronotum. Upper surface densely and coarsely punctate and with rather dense, coarse longitudinal striae near eyes. Centre of frons without striae but coarsely punctate, vertex with some irregular, coarse striae. No microreticulation visible. Surface very glossy.

Pronotum. Moderately wide, cordiform, surface depressed. Apex moderately excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface densely and coarsely punctate and striolate, lateral parts with coarser and even denser punctation and with even denser transverse striae. No traces of microreticulation visible, surface very glossy.

Elytra. Rather elongate, depressed, widest in middle though laterally almost parallel. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, rather coarsely punctate-crenulate. Intervals fairly convex, each with a clearly visible, irregular row of coarse punctures, without any microreticulation. Surface very glossy, highly iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, proepisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 5B) Rather large in comparison to body size. Genital ring narrow,

almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex narrow and elongate, rather acute at tip. Parameres very dissimilar, ascotose, left one large, wide, irregularly triangular, right one small, rather short.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. The holotype was collected by Berlese sampling of ground litter in deciduous vine forest at rather low altitude.

DISTRIBUTION. (Fig. 11) Vicinity of Chillagoe, northern Queensland west of the Great Dividing Range. Known only from the type locality.

RELATIONSHIPS. Most closely related to *H. punctatipennis* sp. nov. from coastal northern Queensland.

***Habutarus weiri* sp. nov.**
(Figs 3F, 5C, 11)

ETYMOLOGY. The name is a patronym in honour of the collector.

MATERIAL. HOLOTYPE: ♂, 13.44S 143.20E QLD 11km WbyN of Bald Hill, McIlwraith Range, 27 June-12 July 1989, T. A. Weir, 520m, search party campsite / Berlesate ANIC 1118 leaf litter closed forest (ANIC). **PARATYPES:** 2♀, same data (ANIC, CBM).

DIAGNOSIS. Medium-sized species with highly iridescent elytra. Distinguished from *H. convexipennis* sp. nov. by longer elytra; from *H. punctatipennis* sp. nov. and *H. chillagoensis* sp. nov. by the far less coarse punctuation of the elytral intervals; from *H. monteithi* sp. nov. by a less cordiform pronotum bearing a wider base, larger size, and the much denser punctuation and striolation of the head; from *H. calderi* sp. nov. by a wider pronotum, particular relative to the head, but with a comparatively wider base; and from *H. kirramae* sp. nov. by smaller size and a wider pronotum.

DESCRIPTION. Measurements (Table 1). Length: 5.9-6.1mm; width: 2.2-2.3mm. Ratios. Length eye/orbit: 2.1-2.3; width/length of pronotum: 1.24-1.27; width widest diameter/base of pronotum: 1.30-1.33; width pronotum/head: 1.28-1.31; length/width of elytra: 1.46-1.51; width elytra/pronotum: 1.40-1.42.

Colour. (Fig. 3F) Uniformly black, elytra not lighter, highly sericeous. Labrum and apical half of clypeus dark red. Anterior part of lateral margins of pronotum and lateral margin of elytra very narrowly red. Epipleura red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ strongly securiform. Antenna short, just surpassing base of pronotum. Whole upper surface coarsely punctate and with very coarse longitudinal striae extending over whole length of frons and vertex. On centre of frons traces of extremely superficial isodiametric microreticulation visible at high magnification. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Disc densely and coarsely punctate and more or less densely striolate, laterally punctures and striae even denser and coarser. No traces of microreticulation visible, surface very glossy.

Elytra. Moderately wide and depressed, very little widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, rather coarsely punctate-crenulate. Intervals fairly convex, each with an irregular row of moderately fine punctures that is quite difficult to detect, without any microreticulation. Surface very glossy, highly iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, propisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 5C) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base rather deep. Aedeagus comparatively narrow

and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, apex short and rather stout, straight, obtuse at tip. Parameres very dissimilar, aetose, left one large, irregularly triangular, right one small, moderately elongate.

Variation. Very little variation noted apart from slight differences in relative shape and microstructure of pronotum.

COLLECTING CIRCUMSTANCES. Collected by Berlese extraction of leaf litter in 'closed forest', probably rainforest, at medium altitude.

DISTRIBUTION (FIG. 11). McIlwraith Range, east of Coen, mid Cape York Peninsula, northern Queensland. Known only from the type locality.

RELATIONSHIPS. Based on the structure of the head and pronotum, probably most closely related to *H. calderi* sp. nov. from the vicinity of Cooktown.

***Habutarus calderi* sp. nov.**
(Figs 4A, 5D, 11)

ETYMOLOGY. The name is a patronym in honour of the collector.

MATERIAL. HOLOTYPE: ♂, 15.03S 145.09E 3km NE of Mt Webb QLD, 30 Apr-3 May 1981, A. Calder & J. Feehan / Berlesate ANIC 721 rainforest litter (ANIC). PARATYPES: 1♂, 1♀, same data (ANIC, CBM); 1♂, same locality, 1-3 Oct 1980r / Berlesate ANIC 650 Sieved rain-forest litter (ANIC); 1♀, 15.04S 145.07E Mt Webb NP QLD 27-30 Apr 1981, A. Calder & J. Feehan / Berlesate ANIC 715 rainforest litter (ANIC); 1♀, 15.29S 145.16E, Mt Cook NP QLD, 10-12 May 1981, A. Calder & J. Feehan / Berlesate ANIC 724 *Melaleuca* litter (ANIC).

DIAGNOSIS. Medium-sized species with very iridescent elytra. Distinguished from *H. convexipennis* sp. nov. by longer elytra; from *H. punctatipennis* sp. nov. and *H. chillagoensis* sp. nov. by the far less coarse punctation of the elytral intervals; from *H. monteithi* sp. nov. by a narrower pronotum, in particular relative to head, larger size, and much denser punctation and striolation of the head; from *H. weiri* sp. nov. by a narrower pronotum, in particular relative to the head, but with a comparatively narrower base; and from *H. kirramiae* sp. nov. by smaller size and a wider pronotum.

DESCRIPTION. *Measurements.* (Table 1) Length: 4.8-6.0mm; width: 1.9-2.3mm. Ratios. Length eye/orbit: 2.0-2.2; width/length of pronotum: 1.20-1.23;

width widest diameter/base of pronotum: 1.34-1.39; width pronotum/head: 1.19-1.25; length/width of elytra: 1.47-1.52; width elytra/pronotum: 1.44-1.52.

Colour: (Fig. 4A) Head black, in most specimens pronotum faintly lighter, dark piceous, and elytra still lighter and piceous or even red-piceous. Elytra highly sericeous. Labrum and clypeus dark red. Anterior part of lateral margins of pronotum and lateral margin of elytra narrowly red. Epipleura red. Palpi, antennae, and legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about 2.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ strongly securiform. Antenna short, just surpassing base of pronotum. Upper surface coarsely and rather densely punctate and striolate, though striae in middle of frons less distinct. On centre of frons traces of extremely superficial isodiametric microreticulation visible at high magnification. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc very sparsely and finely punctate, almost glossy, without transverse striae. Only at apex, base and near lateral margin punctation coarser and denser and with rather superficial transverse striae. No traces of microreticulation visible, surface very glossy.

Elytra. Moderately wide and depressed, very little widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, rather coarsely punctate-crenulate. Intervals fairly convex, each with an irregular row of moderately fine punctures that are quite difficult to detect, without any microreticulation. Surface very glossy, highly iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, proepisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 5D) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base rather deep. Acdeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, apex elongate, straight, very slightly widened at tip. Parameres very dissimilar, aetose, left one large, very irregularly triangular, right one small, moderately elongate.

Variation. A rather variable species in body size and in the proportions of pronotum that seems to be narrower in small specimens.

COLLECTING CIRCUMSTANCES. Collected by Berlese extraction of leaf litter in rainforest.

DISTRIBUTION (FIG. 11). Mt Webb and Mt Cook, near Cooktown, north-eastern Queensland.

RELATIONSHIPS. Based on the structure of the head and pronotum, probably most closely related to *H. weiri* sp. nov. from the McIlwraith Range further north.

***Habutarus kirramae* sp. nov.**
(Figs 4B, 5E, 10)

ETYMOLOGY. The name refers to the type locality, Kirrama Range south-west of Tully.

MATERIAL. HOLOTYPE: ♂, Kirrama Range, NE QLD (Mt Smoko turnoff, 600m) 10 Dec 1986 – 11 Jan 1987, Monteith, Thompson & Hamlet, RF, Pitfalls Traps/ QM Reg. No. T22151 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (QM). **PARATYPES:** 2♀, Kirrama Range, NEQLD (Douglas Ck Rd, 800m) 10 Dec 1986 – 11 Jan 1987, Monteith, Thompson & Hamlet, RF, Pitfalls Traps/ QM Reg. No. T22149-50 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (CBM, QM).

DIAGNOSIS. Moderately large species with glossy, somewhat iridescent elytra. Distinguished from all other Australian species of the *papua*-group by a combination of larger size, a narrow pronotum bearing extraordinarily narrow lateral margins, very finely punctate elytra, and an almost glabrous head and pronotum.

DESCRIPTION. *Measurements* (Table 1). Length: 6.4-6.9mm; width: 2.4-2.6mm. Ratios. Length eye/

orbit: 1.6-1.8; width/length of pronotum: 1.15-1.20; width widest diameter/base of pronotum: 1.33-1.36; width pronotum/head: 1.21-1.25; length/width of elytra: 1.48-1.50; width elytra/pronotum: 1.45-1.52.

Colour. (Fig. 4B) Head and pronotum black, elytra faintly lighter, very dark piccous, highly sericeous. Labrum dark red. Lateral margins of pronotum and elytra not lighter, though epipleura dark red. Palpi, antennae, and legs light red.

Head. Large, dorsally unusually convex, with moderately large, moderately protruding eyes that are less than twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex slightly less than half as wide as long, in ♂ strongly securiform. Antenna short, barely attaining base of pronotum. Upper surface near eyes with very few, short, coarse longitudinal striae that end about at middle of eyes. Centre of frons and vertex with very sparse and fine punctures but without any striae. No microreticulation visible. Surface very glossy.

Pronotum. Moderately wide, cordiform, surface rather depressed. Apex very slightly excised, base in middle produced. Apical angles little projecting, rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin very narrow throughout. Most of disc very sparsely and finely punctate, almost glossy, without transverse striae. Only near base and near lateral margins punctation slightly coarser and denser and with superficial transverse striae. No traces of microreticulation visible, surface very glossy.

Elytra. Moderately wide and depressed, distinctly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel very narrow. Striae impressed, complete, moderately deep, finely punctate-crenulate. Intervals fairly convex, each with an irregular row of very fine punctures that is visible only at high magnification, without any microreticulation. Surface very glossy, rather iridescent. 3rd interval bipunctate, punctures coarse, situated in middle of interval, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum sparsely and shallowly punctate, proepisternum sparsely punctate and

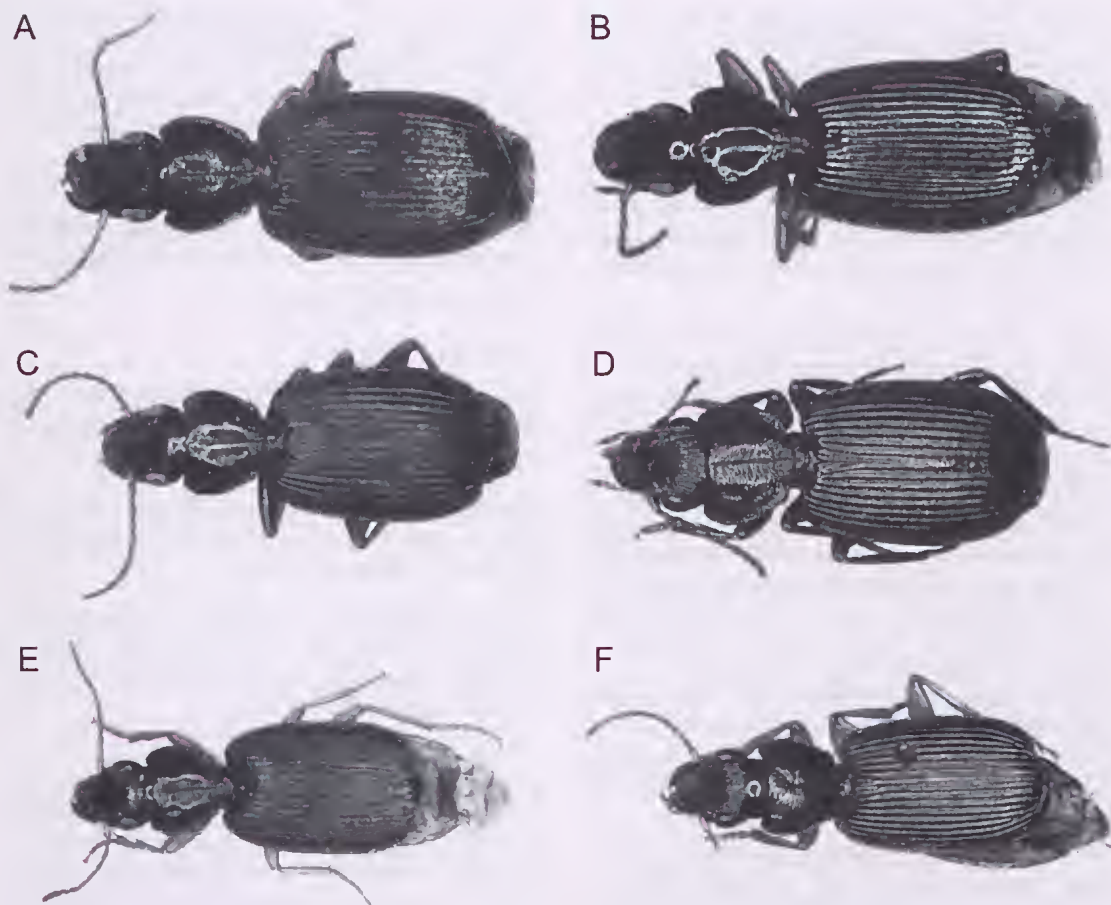


FIG. 4. Dorsal views of *Habutarus* spp. (body length in brackets). A, *H. calderi* sp. nov. (6.0mm); B, *H. kirramae* (6.9mm); C, *H. convexipennis* sp. nov. (5.25mm); D, *H. crassiceps* (Macleay) (8.3mm). E, *H. laticeps* sp. nov. (8.7mm); F, *H. parviceps* sp. nov. (8.6mm).

pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. (Fig. 5E) Rather large in comparison to body size. Genital ring moderately narrow, only at apex slightly asymmetric. Base rather deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, apex moderately elongate, straight, slightly obtuse at tip. Parameres very dissimilar, asetose, left one large, elongate, irregularly triangular, right one small, moderately elongate.

Variation. Apart from some differences in the relative width of the pronotum, very little variation noted.

COLLECTING CIRCUMSTANCES. Collected in a pitfall trap, in rainforest, at a fairly high altitude of 600-800m.

DISTRIBUTION. (Fig. 10) Kirrama Range, south-west of Tully, north-eastern Queensland. Known only from the type locality.

RELATIONSHIPS. Due to the very weak punctation on all body surfaces, and the extremely narrow lateral margins of the pronotum, this is a rather isolated species within the group of species related to *H. monteithi* sp. nov.

***Habutarus convexipennis* sp. nov.**
(Figs 4C, 10)

ETYMOLOGY. The name refers to the short and comparatively convex elytra.

MATERIAL. HOLOTYPE: ♀, NT Baroalba Ck Gorge, 19km Ex N of Mt Cahill, 16 Nov 1972 R. W. Taylor /Berlesate ANIC. 446 rainforest 12.50S 132.52E (ANIC).

DIAGNOSIS. Rather small species with very iridescent elytra. Distinguished from all other Australian species of the *papua*-group by wider pronotum and shorter and wider elytra.

DESCRIPTION. *Measurements* (Table 1). Length: 5.25mm; width: 2.05mm. Ratios. Length eye/orbit: 2.0; width/length of pronotum: 1.29; width widest diameter/base of pronotum: 1.36; width pronotum/head: 1.29; length/width of elytra: 1.42; width elytra/pronotum: 1.44.

Colour. (Fig. 4C) Head and pronotum black, elytra very faintly lighter, very dark piceous, very sericeous. Palpi and antennae red, legs dirty yellow, but femora with a piceous tint.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Apical palpomere of ♀ labial palpus about half as wide as long, that of ♂ unknown. Antenna short, just attaining base of pronotum. Upper surface near eyes with a few coarse longitudinal striae that end in front of posterior margin of eyes. Centre of frons and vertex with very sparse, moderately coarse punctures but without any striae. Extremely fine and superficial traces of microreticulation visible in middle under high magnification. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc sparsely and finely punctate, almost glossy, without distinct transverse striae. Only at apex, base and near lateral margin punctation coarser and denser and laterally with rather dense and distinct transverse striae. No traces of microreticulation visible, surface very glossy.

Elytra. Rather short and wide, dorsally comparatively convex, slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, deep, coarsely punctate-crenulate. Intervals convex, irregularly impressed laterally by the coarse punctation of striae, each with an irregular row of fine punctures that is extremely difficult to detect, without any microreticulation. Surface very glossy,

very iridescent. 3rd interval bipunctate, punctures coarse, though difficult to detect, situated in middle of interval or near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum barely punctate, proepisternum sparsely punctate and pilose; mesothorax, metathorax, and abdomen almost impunctate, whole lower surface very glossy.

Male genitalia. Unknown.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. The holotype was collected by Berlese sampling in deciduous rainforest of low altitude.

DISTRIBUTION. (Fig. 10) Kakadu National Park, western margin of Arnhem Land, far northern Northern Territory.

RELATIONSHIPS. Related to the species following *monteithi*, in this paper though differing from all by its exceptionally short and virtually impunctate elytra.

CRASSICEPS-GROUP

This is a group of mostly large species that bear a thickly sclerotised aedeagus, usually with a distinctly hook-shaped apex. *Habutarus eungellae* sp. nov. most probably belongs to this group, even though the form of its male genitalia is unknown.

***Habutarus crassiceps* (Macleay, 1871) comb. nov.**
(Figs 4D, 5F, 11)

Cymindis crassiceps Macleay, 1871: 84.

Nototarus crassiceps, Sloane 1915: 471; Csiki 1932: 1492; Moore et al. 1987: 307; Lorenz 1998: 471; 2005: 497.

MATERIAL. LECTOTYPE: ♀, Queensland/ *Cymindis crassiceps* MacL. Moreton Bay / **HOLÓTYPE** (ANIC-MMS). **NEW MATERIAL:** (13 specimens): QUEENSLAND, 2♂♂, 28°08'S × 152°26'E Mt Huntley, 1250m, 29-30 Jan 1993, G. B. Monteith (CBM, QM); 1♂, Bald Mtn. Area via Emu Vale, SE Qld. 22-24 April, 1984, G. Monteith (QM); 2♂♂, SEQ: 26°09'S × 151°55'E, Jack Smith Scrub, 26 Nov 1995, 500m G. B. & S. R. Monteith (CBM, QM); 1♂, AUST: QM: SE: Perry's Knob, 15 May 1999, G. B. Monteith / QM Berlesate 994, 29°36'S × 152°36'E, Vinc Scrub, 200m (QM); 1♂, Little Yabba Ck. B/1 via Kenilworth, SE Qld., G. B. & S. R. Monteith (QM); 1♀, Brooyar Fire Tower, via Gympie, SE Qld. 1975-1976. 457m, A/1 G. B. & S. R. Monteith (QM); 1♂, Tambourine (=Tamborine) 5/5728 / E. Sutton Collection, Don. - Dec 1964 (QM); 1♀, NP, Q., H. Hacker. Dec 1919 / Dct. (?) Sloane

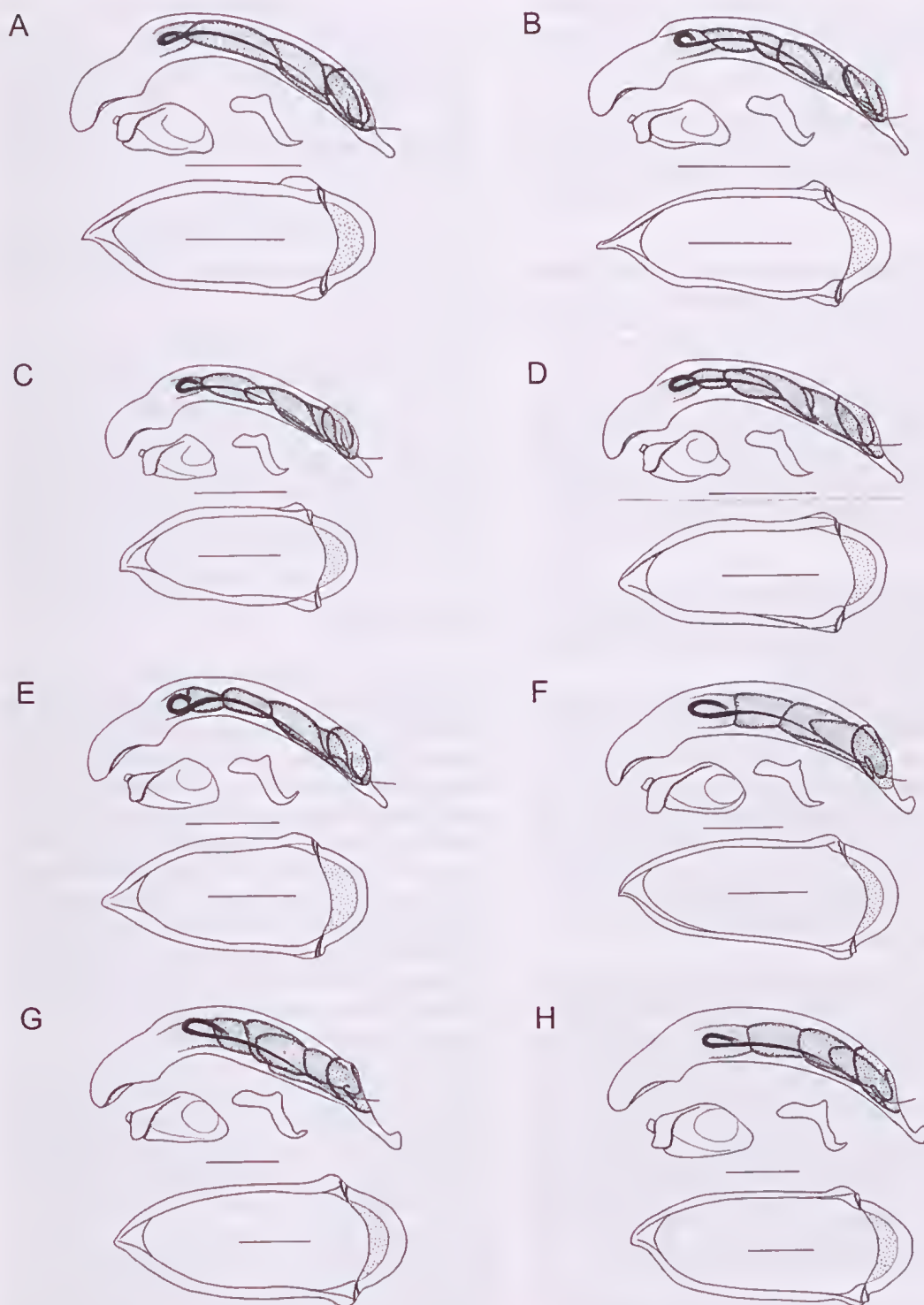


FIG. 5. Male genitalia of *Habutarus* spp. showing aedeagus (upper), parameres (centre) and genital ring (lower), scale 0.5mm. A, *H. punctatipennis* sp. nov.; B, *H. chillagoensis* sp. nov.; C, *H. weiri* sp. nov.; D, *H. calderi* sp. nov.; E, *H. kirramae* sp. nov.; F, *H. crassiceps* (Macleay); G, *H. laticeps* sp. nov.; H, *H. parviceps* sp. nov.

(QM); 1♂, Thunderbird Park, Tamborine Mtn QLD, 24-29 Oct 1993, S. A. Slipinski & J. F. Lawrence, colls (ANIC); 2♀♀ (partly destroyed), K13144 / *Cymindis crassiceps* MacL. Gayndah. Q. (AMS).

NOTE. Although Moore et al. (1987) said that syntype(s) were only located in the Macleay type collection of the ANIC, two old specimens from Gayndah in AMS might belong to the type series.

DIAGNOSIS. Large black species, immediately recognised by the dark legs and the very coarse and dense striolation of the head and the punctuation of the pronotum.

DESCRIPTION. *Measurements* (Table 1). Length: 6.8-8.4mm; width: 2.8-3.45mm. Ratios. Length eye/orbit: 1.5-2.2; width/length of pronotum: 1.29-1.37; width widest diameter/base of pronotum: 1.36-1.44; width pronotum/head: 1.26-1.32; length/width of elytra: 1.37-1.45; width elytra/pronotum: 1.35-1.44.

Colour. (Fig. 4D) Unicolourous black, though elytra with more or less distinct violaceous lustre. Palpi and antennae red. Legs black, sometimes tibiae piecous, tarsi red.

Head. Large, with large, moderately protruding eyes that are about 3 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ remarkably securiform. Antenna short, just attaining base of pronotum. Upper surface completely covered by very coarse and dense longitudinal striae that are mixed with coarse punctures. Only superficial traces of isodiametric microreticulation visible. Surface glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface completely covered by very coarse punctures and transverse striae. Microreticulation absent, surface glossy.

Elytra. Wide and moderately depressed, slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely erenulate.

Intervals convex, each with an irregular row of fine punctures and with very distinct, isodiametric microreticulation, surface moderately dull. 3rd interval bipunctate, punctures coarse, situated in about centre of interval, the anterior one slightly in front of middle, the posterior one at apical quarter.

Ventral surface. Prosternum and proepisternum coarsely punctate, the latter also sparsely pilose; mesothorax, metathorax, and abdomen more finely punctate.

Male genitalia. (Fig. 5F) Rather large in comparison to body size. Genital ring narrow, almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively compact, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex comparatively short, with strong somewhat club-shaped apical hook that is slightly directed to right side. Parameres very dissimilar, asetose, left one large, wide, rather triangular, right one small, elongate.

Variation. This species varies significantly in size, relative shape of the pronotum and elytra, and the distinctiveness of the elytral microreticulation. Both specimens from Jack Smith Scrub near Gympie are smaller than usual, have more distinctly punctate elytra that possess a much more superficial microreticulation and also a distinct violaceous lustre. The apex of their aedeagi is slightly shorter than in specimens from Main Range. Surface structures of head and pronotum, however, are very similar in all specimens. Although populations may differ, the picture is not yet clear and any taxonomic and nomenclatorial decisions should be postponed until additional material is at hand.

COLLECTING CIRCUMSTANCES. Largely unknown, though one specimen was collected from 'Vine Scrub, Sieved litter' and two others in 'pitfall' and in 'Rainforest Pitfall'. The altitude range in labelled specimens is from 200 to 1250m.

DISTRIBUTION. (Fig. 11) From the environs of Gympie, in the north, to Main Range near the Queensland/New South Wales border, in the south.

RELATIONSHIPS. Most closely related to the central Queensland species *H. laticeps* sp. nov. and *H. parviceps* sp. nov.

***Habutarus laticeps* sp. nov.**
(Figs 4E, 5G, 10)

ETYMOLOGY. The name refers to the relatively wide head.

MATERIAL. HOLOTYPE: ♂, QUEENSLAND, Kroombit Tops, 45km SSW Calliope, 11. Dec 1983, Monteith, Davies, Gallon & Thompson / QM Berlesate No. 627, Site 11, 24.22S × 150.56E, Open forest, 880m, Sieved litter QMT123614 (QM).

DIAGNOSIS. Large species, distinguished from the equally large and most similar species *H. crassiceps* by its light coloured legs, and from *H. parviceps* by a wider pronotum, shorter and wider elytra, the distinct punctation of the elytral intervals, and smaller eyes.

DESCRIPTION. *Measurements* (Table 1). Length: 8.7mm; width: 3.3mm. Ratios. Length eye/orbit: 1.4; width/length of pronotum: 1.27; width widest diameter/base of pronotum: 1.35; width pronotum/head: 1.24; length/width of elytra: 1.43; width elytra/pronotum: 1.40.

Colour. (Fig. 4E) Unicolourous black. Palpi and antennae red. Legs light red.

Head. Large, with moderately large, fairly protruding eyes that are about 1.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♂ remarkably securiform. Antenna short, just attaining base of pronotum. Upper surface completely covered by very coarse and dense longitudinal striae that are mixed with coarse punctures. No microreticulation perceptible. Surface highly glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface completely covered by very coarse punctures and transverse striae. Microreticulation absent, surface glossy.

Elytra. Wide and moderately depressed, slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely erenulate. Intervals convex, each with two irregular rows of moderately coarse punctures and with very distinct, isodimetric microreticulation, surface

moderately dull. 3rd interval bipunctate, punctures coarse, situated about in centre of interval, the anterior one slightly in front of middle, the posterior one at apical quarter.

Ventral surface. Prosternum and proepisternum coarsely punctate, the latter also sparsely pilose; mesothorax, metathorax, and abdomen more finely punctate.

Male genitalia (Fig. 5G). Rather large in comparison to body size. Genital ring narrow, almost symmetric, even at apex. Base moderately deep. Aedeagus comparatively compact, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, in apical part slightly concave, apex comparatively elongate, with strong somewhat club-shaped apical hook that is slightly directed to right side. Parameres very dissimilar, asetose, left one large, wide, rather triangular, right one small, elongate.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. The holotype was collected by Berlese sampling in open forest at a rather high altitude of almost 900m.

DISTRIBUTION. (Fig. 10) Kroombit Tops, central eastern Queensland. Known only from the type locality.

RELATIONSHIPS. Most closely related to the southern *H. crassiceps* and the northern *H. parviceps* sp. nov.

***Habutarus parviceps* sp. nov.**
(Figs 4F, 5H, 11)

ETYMOLOGY. The name refers to the relatively small head.

MATERIAL. HOLOTYPE: ♂, C.QLD: 21°52'S × 149°18'E, Upper Hall Ck. Via Carmila, 4 Dec 96-6 Apr 1997, G. Monteith & E. Mulder, Pitfalls, RF at creek QMT123618 (QM).

DIAGNOSIS. Large species, distinguished from the equally large and most similar species *H. crassiceps* by the light coloured legs, and from *H. laticeps* sp. nov. by a narrower pronotum, longer and narrower elytra, impunctate intervals, and larger eyes.

DESCRIPTION. *Measurements* (Table 1). Length: 8.6mm; width: 3.2mm. Ratios. Length eye/orbit: 2.5; width/length of pronotum: 1.24; width widest diameter/base of pronotum: 1.37; width pronotum/

head: 1.21; length/width of elytra: 1.50; width elytra/pronotum: 1.41.

Colour. (Fig. 4F) Unicolourous black, only margin of pronotum anteriorly very narrowly red. Palpi and antennae red. Legs light red.

Head. Moderately large, with rather large, moderately protruding eyes that are about 2.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♂ remarkably securiform. Antenna short, just attaining base of pronotum. Upper surface completely covered by very coarse and dense longitudinal striae that are mixed with coarse punctures. No traces of microreticulation visible. Surface highly glossy.

Pronotum. Moderately wide, cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface completely covered by very coarse punctures and transverse striae but that are less deep than in related species. Microreticulation absent, surface highly glossy.

Elytra. Comparatively elongate, moderately depressed, barely widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely crenulate. Intervals convex, each with an irregular row of very fine punctures and with very distinct, isodimetric microreticulation, surface moderately dull. 3rd interval bipunctate, punctures coarse, situated near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical quarter.

Ventral surface. Prosternum and proepisternum coarsely punctate, the latter also sparsely pilose; mesothorax, metathorax, and abdomen barely punctate.

Male genitalia. (Fig. 5H) Rather large in comparison to body size. Genital ring narrow, almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively compact, slightly asymmetric, orifice short, situated on left side. Lower surface slightly concave throughout, apex fairly elongate, with strong somewhat club-shaped apical hook that is slightly directed to right side. Parameres

very dissimilar, aetose, left one large, wide, rather triangular, right one small, elongate.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. The holotype was collected by pitfall trapping in rainforest at an unknown altitude.

DISTRIBUTION (FIG. 11). Vicinity of Carmila, central eastern Queensland. Known only from the type locality.

RELATIONSHIPS. Most closely related to the southern species *H. crassiceps* and *H. laticeps* sp. nov.

***Habutarus abboti* sp. nov.**
(Figs 6A, 7A, 10)

ETYMOLOGY. The name refers to the type locality, Mt Abbot west of Bowen.

MATERIAL. HOLOTYPE: ♂, C. QLD: 20°06'S × 147°45'E, Mt Abbot, 800-1000m, 9-12 April 1997, Monteith, Cook & Janetzki QMT123610 (QM). PARATYPES: 1♀, same data (CBM); 1♀, C. QLD: 20°06'S × 147°45'E, Mt Abbot, RF Gully, 10 Apr 1997, G. Monteith, Pyrethrum, trees & rocks (QM).

DIAGNOSIS. Medium-sized species, distinguished from the three previous species by its smaller size and less coarsely sculptured pronotum. Distinguished from the similar-sized species *H. nitidicollis* sp. nov. by a densely punctate and striolate pronotum and distinctly reticulate elytra, from *H. iridipennis* sp. nov. by its dark colour and non-iridescent elytra, and from all three previous species by thickened but not obviously hooked apex of aedeagus.

DESCRIPTION. *Measurements* (Table 1). Length: 6.0-6.3mm; width: 2.30-2.45mm. Ratios. Length eye/orbit: 2.5-2.6; width/length of pronotum: 1.26-1.30; width widest diameter/base of pronotum: 1.38-1.39; width pronotum/head: 1.27-1.28; length/width of elytra: 1.39-1.42; width elytra/pronotum: 1.43-1.48.

Colour. (Fig. 6A) Head and pronotum black, lateral margins narrowly red, elytra very slightly lighter, dark piceous, lateral margins narrowly red. Palpi and antennae red. Legs light red.

Head. Large, with large, moderately protruding eyes that are 2.5 times length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ remarkably securiform. Antenna short, just attaining base of

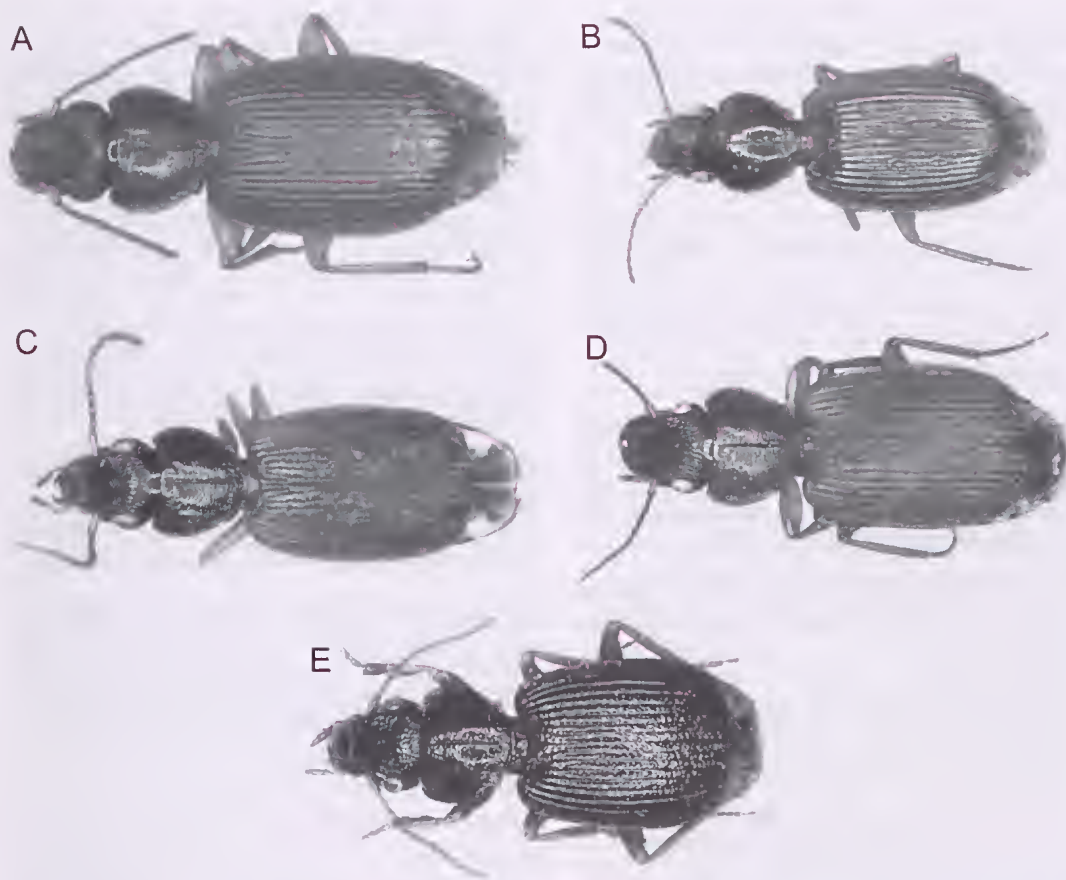


FIG. 6. Dorsal views of *Habutarus* spp. (body length in brackets). A, *H. abboti* sp. nov. (6.3mm); B, *H. nitidicollis* sp. nov. (7.4mm); C, *H. iridipennis* sp. nov. (5.8mm); D, *H. eungellae* sp. nov. (7.0mm); E, *H. pilosus* (Baehr) (6.8mm).

pronotum. Upper surface completely covered by very coarse and dense longitudinal striae that are mixed with coarse punctures. Only superficial traces of isodiametric microreticulation visible. Surface glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface completely covered by very dense and rather coarse punctures and transverse striae, but punctures and striae less deeply impressed than in the three previous

species. Superficial traces of microreticulation visible, surface glossy.

Elytra. Wide and moderately depressed, slightly widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely crenulate. Intervals convex, with very distinct, isodiametric microreticulation, punctation present but almost invisible within microreticulation, surface dull. 3rd interval bipunctate, punctures coarse, the anterior pair situated about in centre of interval or near 2nd stria and slightly in front of middle, the posterior pair situated near 3rd stria at apical quarter.

Ventral surface. Prosternum and proepisternum with very few, superficial punctures, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. (Fig. 7A) Rather large in comparison to body size. Genital ring narrow, almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively compact, slightly asymmetric, orifice short, situated on left side. Lower surface almost straight, only near apex very slightly concave, apex comparatively elongate, with somewhat club-shaped but not definitively hook-like tip that is slightly directed to right side. Parameres very dissimilar, aetose, left one large, wide, markedly triangular at apex, right one small, elongate.

Variation. Very little variation noted.

COLLECTING CIRCUMSTANCES. One specimen was sampled by 'Pyrethrum, trees & rocks' which means fogging from boulders and the bases of standing trees. To date known only from remnant rainforest above 800m.

DISTRIBUTION. (Fig. 10) Mt Abbot, west of Bowen, North Queensland. Known only from the type locality.

RELATIONSHIPS. With respect to external morphological characters, more closely related to the three previous species than to the next two.

***Habutarus nitidicollis* sp. nov.**
(Figs 6B, 7B, 11)

ETYMOLOGY. The name refers to the impunctate, glossy pronotum.

MATERIAL. HOLOTYPE: ♂, NEQ: 16°26'S × 145°12'E, Mt Spurgeon Summit 21 Nov 1997, 1320m 1638 Monteith, Cook, Burvell / QM Reg. No. T66696 (QM). **PARATYPES:** 1♂, NE: Q: 16°24'S × 145°13'E, 3.5km NNE Mt Spurgeon, 15-20 Oct 1991, 1350m, Monteith, Janetzki, Cook & Roberts. PITFALLS / QM Reg. No. T22159 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (QM); 1♂, 1♀, NE: Q: 16°24'S × 145°13'E, Stewart Ck., 4km NNE Mt Spurgeon (Camp 1), 1250-1300m, 15-20 Oct 1991. PITFALLS: Monteith, Cook & Roberts / QM Reg. No. T22157-8 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (CBM, QM); 1♂, NEQ: 16°24'S × 145°17'E, Upper High Falls Ck, 25 Jan-12 Feb 1996, R. Wertz 1000m, Flight intercept trap / QM Reg. No. T27809 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (QM); 1♂, Devils Thumb - Paul Luck, 12km WNW Mossman, NQ, 27 Dec 1989 - 15 Jan 1990, ANZSES Expedition Site 11, 1240m, pitfall / QM Reg. No. T22156 / Wetrop databased as ?*Anomotarus* NQ2 (wingless) Temporary label only (QM); 1♂, NE: QLD Devils Thumb, area 10km NW Mossman, 11 Oct 1982, Monteith, Yeates & Thompson / QM

Berlesate No 491, 16-34S 145.17E, Rainforest, 1000-1180m, moss on rocks, trees / QM Reg. No. T22148 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (QM); 1♂, Mossman Bluff Track, 5-10km W. Mossman, N. QLD, 20 Dec 1989-15 Jan 1990, Monteith, Thompson & ANZSES Site 10, 1300m, pitfall / QM Reg. No. T22155 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (QM); 1♀, Mossman Bluff Track, 5-10km W. Mossman, N. Qld. 17-31 Dec 1988 Monteith, Thompson & ANZSES Site 8, 1180m, pitfall / QM Reg. No. T22154 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (QM); 1♂, 1♀, Mt Lewis NQ, Jan-Mar 1988, G. Wood, Pitfalls / QM Reg. No. T22152-3 / Wetrop databased as ?*Anomotarus* NQ1 (wingless) Temporary label only (CBM, QM).

DIAGNOSIS. Fairly large species, at once distinguished from all species of the *crassiceps*-group by the glossy, barely punctate pronotum and the head that is sulcate only near the eyes.

DESCRIPTION. Measurements (Table 1). Length: 6.6-7.7mm; width: 2.6-3.0mm. Ratios. Length eye/orbit: 1.8-2.0; width/length of pronotum: 1.23-1.28; width widest diameter/base of pronotum: 1.39-1.44; width pronotum/head: 1.23-1.29; length/width of elytra: 1.46-1.50; width elytra/pronotum: 1.41-1.47.

Colour. (Fig. 6B) Head and pronotum black, though labrum and apical half of clypeus red. Apical margin and anterior part of lateral margins of pronotum more-or-less distinctly red. Elytra including epipleura red-piceous to piceous, distinctly lighter than fore body, very glossy. Palpi and antennae red. Legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex less than half as wide as long, in ♂ securiform but apex less wide than in related species. Antenna short, just attaining base of pronotum. Upper surface near eyes with coarse and dense longitudinal striae that end in front of posterior margin of eyes. centre of frons and vertex with sparse, moderately coarse punctures but without any striae. Superficial, isodiametric microreticulation visible in middle but not laterally. Surface very glossy.

Pronotum. Wide and cordiform, surface depressed. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and

excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Most of disc very sparsely and finely punctate, almost glossy, without transverse striae. Only at apex, base and near lateral margin punctation coarser and denser. Superficial traces of microreticulation visible at high magnification, surface very glossy.

Elytra. Moderately wide and depressed, widest in middle. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, complete, moderately deep, finely crenulate. Intervals very slightly convex, median ones almost depressed, each with an irregular row of fine punctures and with very superficial, isodiametric microreticulation that is visible only at high magnification, surface glossy. 3rd interval bipunctate, punctures very coarse, somewhat foveate, situated near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third, but location rather irregular.

Ventral surface. Prosternum and propiternum very sparsely punctate, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. (Fig. 7B) Rather large in comparison to body size. Genital ring narrow, almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively narrow and elongate, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave, apex narrow and elongate, with comparatively small, acute, apical hook that is slightly directed to right side. Parameres very dissimilar, aetose, left one large, wide, rather triangular, right one small, very elongate.

Variation. Very little noted, apart from some size differences.

COLLECTING CIRCUMSTANCES. Most specimens were collected in pitfall traps in rainforest with single specimens captured in a 'flight intercept trap' and from 'moss on rocks, trees'. All specimens were collected in montane forest above 1000m elevation, some on the absolute summits of their respective mountains.

DISTRIBUTION. (Fig. 11) Carbine Tableland, northern Queensland.

RELATIONSHIPS. Related to *H. iridipennis* sp. nov. based on colouration, its sericeous lustre, the shape of the setiferous punctures of the elytra, and the shape of the aedeagus.

***Habutarus iridipennis* sp. nov.**
(Figs 6C, 7C, 10)

ETYMOLOGY. The name refers to the iridescent surface of the elytra.

MATERIAL. HOLOTYPE: ♂, NEQ: 16°04'S × 145°25'E Roaring Meg valley, 680m 20-22 Nov 1993. Monteith, Cook, Janetzki & Roberts, pitfall trap / QM Reg. No. T22167 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (QM). Paratypes. 2♂♂, same data (CBM, QM); 2♂♂, NEQ: 16°03'S × 145°25'E, Mt Halcyon, 870m, 22-24 Nov 1993. Cook, Monteith, Janetzki & Roberts. Pitfalls / QM Reg. No. T22168-9 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (QM); 1♀, Mt Finnigan Summit Via Helenvale, N.Qld. 3-5 Dec 1990, 1050m, Cook, Thompson & Roberts, Pitfall Traps / QM Reg. No. T22164 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (QM); 1♀, Mt Finnigan, 37km S Cooktown, N.Qld. 21 Apr 1982, Monteith, Yeates & Cook / Q.M. Berlesate No. 410 15.49S, 145.17E, Rainforest, 1050m, Sieved Litter / QM Reg. No. T22162 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (CBM); 1♀, 2.5km SW Mt Hartley, via Cooktown, N.Qld. 24 Apr 1982, Monteith, Yeates & Cook / Q.M. Berlesate No. 400, 15.47S, 145.19E, Rainforest, 610m, Sieved Litter / QM Reg. No. T22163 / Wetrop databased as ?*Anomotarus* NQ3 (wingless) Temporary label only (QM).

DIAGNOSIS. Medium-sized species, at once distinguished from all species of the *crassiceps*-group by the highly iridescent lustre and the large, foveate setiferous punctures of the elytra.

DESCRIPTION. *Measurements* (Table 1). Length: 5.2-6.1mm; width: 2.05-2.40mm. Ratios. Length eye/orbit: 1.7-1.8 (Mt Finnigan area), 2.2-2.3 (Cape Tribulation area); width/length of pronotum: 1.19-1.27; width widest diameter/base of pronotum: 1.38-1.44; width pronotum/head: 1.19-1.26; length/width of elytra: 1.38-1.40 (Mt Finnigan area), 1.43-1.46 (Cape Tribulation area); width elytra/pronotum: 1.46-1.51 (Mt Finnigan area), 1.41-1.46 (Cape Tribulation area).

Colour. (Fig. 6C) Head and pronotum black, though labrum and apical half of clypeus red. Apical margin and anterior part of lateral margins of pronotum more or less distinctly red. Elytra including epipleura red-piceous, basal third and narrow lateral margin red. Elytra conspicuously

lighter than fore body, with remarkably sericeous lustre. Palpi and antennae red. Legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long, in ♂ remarkably securiform. Antenna short, just attaining base of pronotum. Upper surface with coarse and dense longitudinal striae that are shortened in middle of frons, and with coarse punctures. Isodiametric microreticulation present, though somewhat superficial. Surface moderately glossy.

Pronotum. Moderately wide, cordiform, surface slightly convex. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout, but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface rather densely punctate and striolate, though less so in middle of disc. Punctuation rather fine and somewhat superficial. More or less distinct traces of microreticulation visible, surface moderately glossy.

Elytra. Comparatively wide and depressed, widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, though shallow, complete, finely crenulate. Intervals depressed, somewhat irregular, apparently impunctate, but with very fine, irregularly striolate microreticulation that gives the surface a highly sericeous lustre. 3rd interval bipunctate, punctures wide, foveate, but shallow, situated near 3rd stria, the anterior one slightly in front of middle, the posterior one at apical third.

Ventral surface. Prosternum and proepisternum very sparsely punctate the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.

Male genitalia. (Fig. 7C) Rather large in comparison to body size. Genital ring narrow, almost symmetric, though apex angulate and asymmetric. Base moderately deep. Aedeagus comparatively compact, slightly asymmetric, orifice short, situated on left side. Lower surface very slightly concave in basal half, almost straight in apical half, apex narrow and elongate, with comparatively small, acute, apical hook that is slightly directed to

right side. Parameres very dissimilar, aetose, left one large, wide, triangular, right one small, fairly elongate.

Variation. This species shows some variation. Northern specimens (from Mt Finnigan and Mt Hartley) possess significantly smaller eyes and shorter and wider elytra than those from the Cape Tribulation hinterland. These two mountain areas are separated by the valley of the Bloomfield River. It is uncertain, however, whether these differences are due to geographic or to sexual variation, because all available specimens from near Cape Tribulation are males, whereas all northern specimens are females. Males from the Mt Finnigan area are needed to determine whether the northern population represents a separate taxon.

COLLECTING CIRCUMSTANCES. Sampled by pitfall trapping, sieving and Berlese extraction of rainforest litter on mountain tops from 600-1050m elevation.

DISTRIBUTION. (Fig. 10) Mt Finnigan and vicinity and Cape Tribulation area, south of Cooktown, northern Queensland.

RELATIONSHIPS. Based on its colouration, sericeous lustre, and the shape of the setiferous punctures of the elytra, and the shape of aedeagus this species is a close relative of *H. nitidicollis* sp. nov.

***Habutarus eungella* sp. nov.**
(Figs 6D, 11)

ETYMOLOGY. The name refers to the type locality, the Eungella area of the Clarke Range, west of Mackay.

MATERIAL. HOLOTYPE: ♀, C. Qld: 20°50'S × 148°34'E, Mt Macartney, 900m, 19 Nov 92 – mid April 1993, D. Cook & G. Monteith, RF Intercept & Pitfalls QMT123611 (QM). PARATYPE: 1♀, QLD: 21°02'S × 148°36'E, Upper Cattle Ck, Eungella, 17 Nov 1992, 900m, Monteith, Thompson Cook & Janetzki (CBM).

DIAGNOSIS. A comparatively large species, at once distinguished from all species by the quadripunctate elytra and the yellow, more-or-less distinctly variegated colour pattern.

DESCRIPTION. *Measurements* (Table 1). Length: 7.0-7.2mm; width: 2.85-2.95mm. Ratios. Length eye/orbit: 1.9-2.2; width/length of pronotum: 1.34-1.38; width widest diameter/base of pronotum: 1.38-1.43; width pronotum/head: 1.32; length/

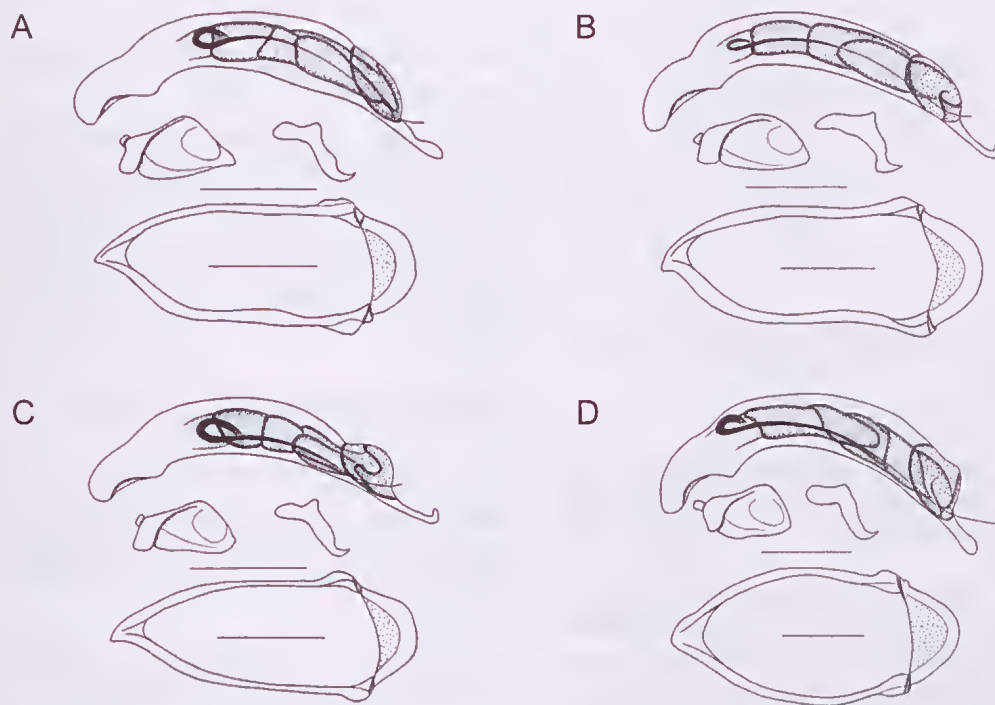


FIG. 7. Male genitalia of *Habutarus* spp. showing aedeagus (upper), parameres (centre) and genital ring (lower), scale 0.5mm. A, *H. abboti* sp. nov.; B, *H. nitidicollis* sp. nov.; C, *H. iridipennis* sp. nov.; D, *H. pilosus* (Bachr.).

width of elytra: 1.39-1.41; width elytra/pronotum: 1.39-1.40.

Colour. (Fig. 6D) Head and pronotum black, lateral margins of pronotum narrowly red. Elytra including epipleura light red, with indistinct variegated piceous pattern. Palpi and antennae red. Legs light red.

Head. Large, with fairly large, moderately protruding eyes that are about twice length of orbits. Mentum with acute median tooth. Labial palpus in ♀ at apex about half as wide as long. Antenna short, just attaining base of pronotum. Upper surface with very coarse and dense longitudinal striae that occupy most of elypeus and extend to neck, and with coarse punctures. Isodiametric microreticulation present and fairly distinct. Surface moderately glossy.

Pronotum. Wide, cordiform, surface slightly convex. Apex slightly excised, base in middle produced. Apical angles projecting though rounded. Lateral margins evenly convex, not sinuate posteriorly but basal angles projecting as minute denticles. Base laterally oblique and excised. Apex not margined in middle, base margined throughout,

but in middle margin fine. Median line deep and sulcate. Basal impressions lacking. Lateral margin narrow throughout. Surface very densely punctate, little striolate, punctation in middle of disc less coriaceous than near margins. Punctation moderately coarse. Isodiametric microreticulation distinct, surface rather dull.

Elytra. Comparatively wide and depressed, widened towards apex. Basal angles projecting but evenly rounded. Apical margin oblique, slightly excised. Lateral channel narrow. Striae impressed, though shallow, complete, finely crenulate. Intervals slightly convex, apparently impunctate, but with very distinct, isodiametric microreticulation that gives the surface a very dull appearance. 3rd interval quadripunctate, punctures small, the anterior one situated near 2nd stria in anterior third, the second one in the centre of the interval about in middle, both posterior ones near 3rd interval at apical third.

Ventral surface. Prosternum and proepisternum with very sparse and shallow punctation but distinct microreticulation, the latter also sparsely pilose; mesothorax, metathorax, and abdomen almost impunctate.



FIG. 8. *Habutarus papua* (Darlington), female stylomeres. A, ventral view. B, median view (scale: 0.1mm).

Male genitalia. Unknown.

Variation. Some variation noted in the distinctness of the elytral pattern that is less distinct in the Eungella specimen than in the Mt Macartney specimen.

COLLECTING CIRCUMSTANCES. The label of one specimen reads 'RF (= rainforest) Intercept and pitfalls', which probably means that the specimen was sampled from the ground in the pitfall trap. Both recorded specimens were collected at 900m elevation in montane rainforest.

DISTRIBUTION. (Fig. 11) Eungella area and adjacent mountains west of Mackay, mid-eastern Queensland.

RELATIONSHIPS. Based on the coarse sculpture of the head and pronotum and the distinct microreticulation of the elytra, closely related to the group of species including *H. crassiceps*, *H. laticeps* sp. nov., and *H. parviceps* sp. nov.

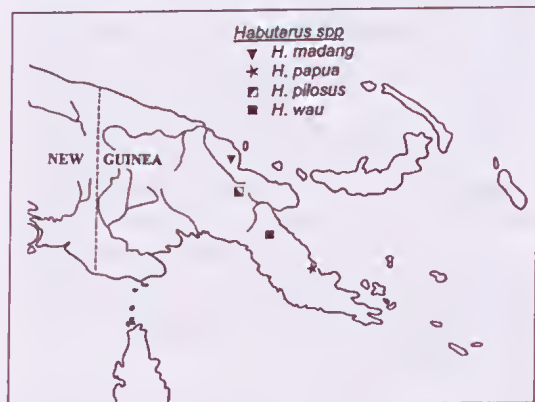


FIG. 9. Distribution of *Habutarus* species in New Guinea: *H. madang* sp. nov., *H. papua* (Darlington), *H. pilosus* (Baehr) and *H. wau* sp. nov.

Setitarus subgen. nov.

TYPE SPECIES. *Nototarus pilosus* Baehr, 1996, by present designation.

DIAGNOSIS. Subgenus of *Habutarus*, characterised by body surface absolutely glabrous without any trace of microreticulation, but covered by sparse, erect pilosity; head with small but unusually protruding eyes; male genital ring oval-shaped, aedeagus as in *papua*-group of subgenus *Habutarus* s. str., but slightly more compact.

***Habutarus pilosus* (Baehr, 1996) comb. nov.**
(FIGS 6E, 7D, 9)

Nototarus pilosus Baehr, 1996: 608; Lorenz 1998: 471.

MATERIAL. HOLOTYPE: ♂, Papua Nlle Guinée W. G. Ullrich / 24 IX 79 PNG/EHProv. Kainantu Onerunka / HOLOTYPE *Nototarus pilosus*, sp. nov. det M. Baehr 1995 (MCSN).

DIAGNOSIS. As for subgenus. Easily identified by the erect pilosity of the body surface.

PARTIAL REDESCRIPTION. *Measurements.* (Table 1) Length: 6.8mm; width: 2.8mm. Ratios. Length eye/orbit: 1.60; width/length of pronotum: 1.22; width widest diameter/base of pronotum: 1.36; width pronotum/head: 1.21; length/width of elytra: 1.36; width elytra/pronotum: 1.42.

Colour and body shape. See fig. 6E.

Male genitalia. (Fig. 7D) Rather large in comparison to body size. Genital ring wide, markedly convex, almost symmetric. Base deep. Aedeagus comparatively stout, slightly asymmetric, orifice short, situated on left side. Lower surface slightly concave, apex moderately elongate but rather stout, straight, very slightly widened at tip. Parameres very dissimilar, asetose, left one large, elongate, rather triangular, right one small, moderately elongate.

Female genitalia. Unknown.

Variation. Unknown.

COLLECTING CIRCUMSTANCES. Unknown.

DISTRIBUTION. (Fig. 9) Eastern Papua New Guinea. Known only from the type locality.

RELATIONSHIPS. Unique within the genus and sister species to all other species of *Habutarus*.

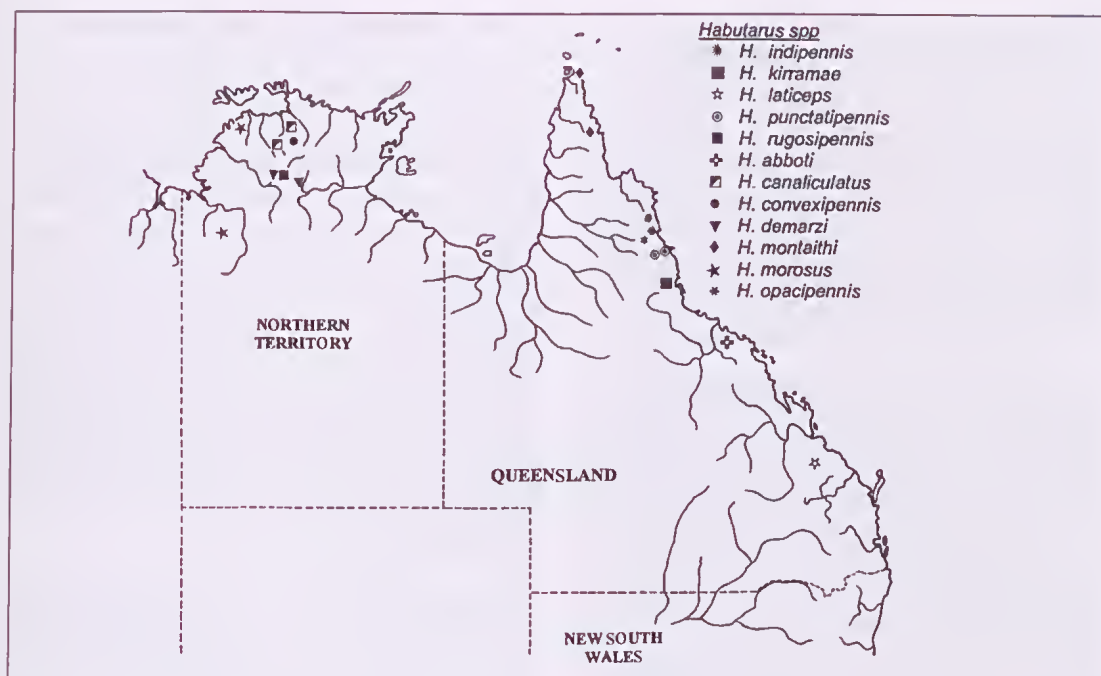


FIG. 10. Distribution of *Habutarus* species in northern Australia: *H. iridipennis* sp. nov., *H. kirramae* sp. nov., *H. laticeps* sp. nov., *H. punctatipennis* sp. nov., *H. rugosipennis* sp. nov., *H. abboti* sp. nov., *H. canaliculatus* sp. nov., *H. convexpennis* sp. nov., *H. demarzi* sp. nov., *H. monteithi* sp. nov., *H. morosus* (Sloane) and *H. opacipennis* sp. nov.

DISCUSSION

Apart from the aberrant New Guinean *H. pilosus* (Bachr) all recorded species of *Habutarus* are quite similar in external as well as in genitalic morphology. Based on minor differences in body size and shape, and in the structure of their male aedeagi, two species-groups can be differentiated within the nominate subgenus. The *papua*-group contains generally smaller species bearing a less thickly sclerotised aedeagus that always has the apex straight and not hooked. These species occur in northern and eastern Australia and New Guinea. The *crassiceps*-group includes larger species bearing a thickly sclerotised aedeagus with distinctly hook-shaped apex. This group occurs only in eastern Queensland.

The structure of the male and female genitalia in *Habutarus* is very similar to that of the African-Oriental genus *Cymindoidea* Castelnau, though the two genera have rather different body shapes and structure of the body surface. Moreover all species of *Habutarus* are flightless and thus bear a shortened metathorax. Certainly the presence of the elongate filum within the male aedeagus is evidence of a close relationship

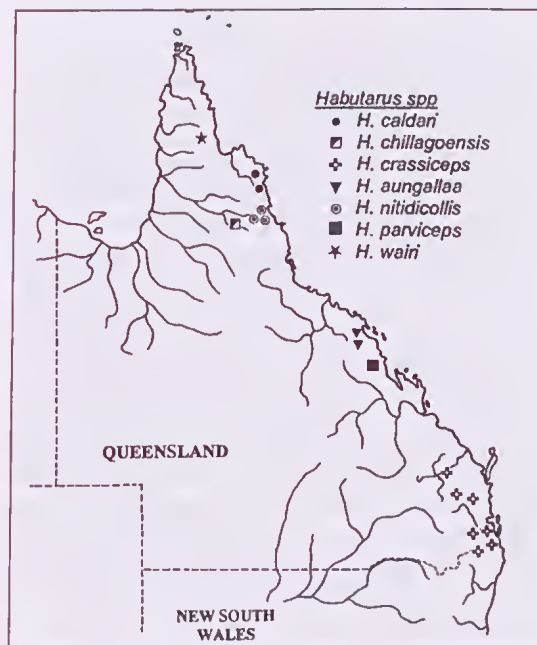


FIG. 11. Distribution of *Habutarus* species in Queensland: *H. calderi* sp. nov., *H. chillagoensis* sp. nov., *H. crassiceps* (Macleay), *H. eungellae* sp. nov., *H. nitidicollis* sp. nov., *H. parviceps* sp. nov. and *H. weiri* sp. nov.

of *Habutarus* and *Cymindoidea* and renders derivation of *Habutarus* from a *Cymindoidea*-like ancestor highly probable. Atrophy of wings and the restricted, marginal range of the genus *Habutarus* in eastern New Guinea and northern and eastern Australia suggest a recently achieved distribution and further corroborate its apotypic status as compared with the Oriental *Cymindoidea*. Hence, the origin of the *Habutarus*-lineage from a *Cymindoidea*-like stock is highly probable, making *Habutarus* an Oriental faunal element within the fauna of the Australian Region.

The distribution in tropical northern and eastern Australia in combination with a preference for rainforest further points to a post-Miocene immigration of the genus into Australia, after the Australian plate had contacted the south Asian insular belt. Thus, *Habutarus* seems to represent a young Oriental faunal element that developed a multitude of species in the eastern rainforests and reached as far south as the subtropical rainforests along the Queensland/New South Wales border. Its greatest species diversity, however, is in northeastern Queensland, where a number of species occur on separate mountain tops and tablelands being endemic to highly restricted ranges.

Many Australian species of the *papua*-group are very similar in shape and structure to the New Guinean species, and probably represent the original stock of immigrants into Australia. Although the members of the *papua*-group are still quite similar in appearance, a number of species that exclusively occur in the northern-most Northern Territory deviate by either possessing canaliculated and at the same time conspicuously opaque elytra bearing somewhat tectiform intervals (e.g. *H. morosus*, *H. demarzi*, *H. canaliculatus*), or very rugose elytra and, at the same time a conspicuously glabrous head and pronotum (*H. rugosipennis*). All species of the *papua*-group occurring in Queensland, on the other hand, possess more-or-less highly sericeous elytra, whereas the three species occurring in New Guinea do not and, in the structure of their elytra (moderately convex intervals, no distinct sericeous lustre, indistinct or absent punctuation of intervals, moderate microreticulation) they seem to possess the most plesiomorphic character states within the genus.

Most species of the *crassiceps*-group are considerably larger and are distinguished by the hook-shaped apex of their aedeagus, both apomorphic character states. In the structure of their elytra, a number of species are rather similar to the New

Guinean species, but two are distinguished by either the red colour of their elytra with a hint of a variegated pattern (*H. eungellae*), or by the light colour and extremely sericeous lustre of their elytra. In Australia, species of the *papua*-group are not recorded from further south than the Kirrama Range southeast of Tully, and thus, they seem to be restricted to the tropics of north-eastern and northern Australia from slightly south of the Atherton Tableland to near the Northern Territory/Western Australia border. Species of the *crassiceps*-group occur along the whole of eastern Queensland, from Mt Finnigan, south of Cooktown, in the north, to the Queensland/New South Wales border, in the south. It is only this group, therefore, that was able to colonise subtropical regions, but apparently it does not occur further north in Cape York Peninsula as do some species of the *papua*-group.

It seems, then, that the Australian species of *Habutarus* are generally more apomorphic in a number of character states than the New Guinean ones, and this demonstrates the direction in which the first stock(s) of this genus immigrated into Australia: probably from eastern New Guinea through Cape York Peninsula to south-eastern Queensland on the one hand, and to far Northern Territory, on the other.

The high level of similarity of most species in external as well as in genitalic morphology suggests rather recent speciation events that may have been connected with the oscillating climatic and floristic changes in much of eastern and northern Australia during the Pleistocene, in the same way as postulated for other groups of flightless ground beetles in the same area that are rich in endemic species with very restricted ranges (see Darlington, 1961a-d; 1971; Baehr, 1995; 2003; 2005a; Yeates, et al. 2002). With respect to the Wet Tropics of northern Queensland, which are renowned for the high diversity of species with southern relationships ('bassian' faunal elements – for examples see references above), *Habutarus* is the first recorded carabid beetle group of Oriental origin that has managed to achieve comparable high levels of diversification. Almost all other rain forest dwelling carabid beetle genera of Oriental origin in northern Queensland are represented by single or a few species only and most of these inhabit lowland rain forest. In *Habutarus* it was probably the colonisation of mountain tops and subsequent atrophy of the wings that was responsible for the unusual diversity.

CHECKLIST AND KNOWN DISTRIBUTION OF *HABITARUS* SPECIES

Genus *Habutarus* Ball & Hilehie s. str.

papua (Darlington)	PNG
wau sp. nov.	PNG
madang sp. nov.	PNG
morosus (Sloane)	northern NT
demarzi sp. nov.	northern NT
canaliculatus sp. nov.	northern NT
rugosipennis sp. nov.	northern NT
opacipennis sp. nov.	north-eastern QLD
monteithi sp. nov.	north-eastern QLD
punctatipennis sp. nov.	north-eastern QLD
ehillagoensis sp. nov.	northern QLD
weiri sp. nov.	north-eastern QLD
ealderi sp. nov.	north-eastern QLD
kirramae sp. nov.	north-eastern QLD
convexipennis sp. nov.	northern NT
crassiceps (Macleay)	south-eastern QLD
laticeps sp. nov.	central-eastern QLD
parviceps sp. nov.	central-eastern QLD
abboti sp. nov.	north-eastern QLD
nitidicollis sp. nov.	north-eastern QLD
iridipennis sp. nov.	north-eastern QLD
eungellae sp. nov.	central-eastern QLD

Subgenus *Setitarus* subgen. nov.

<i>pilosus</i> (Baehr)	PNG
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